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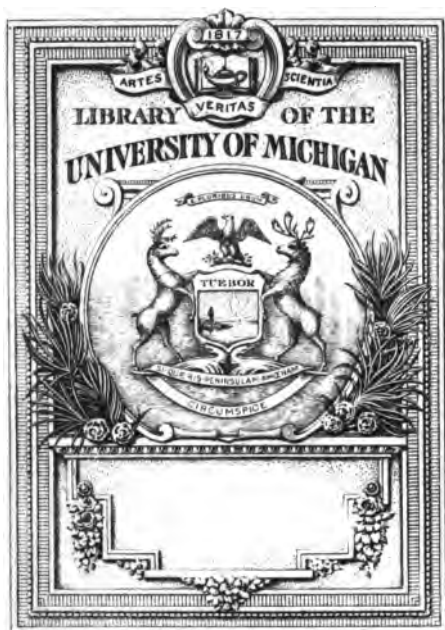
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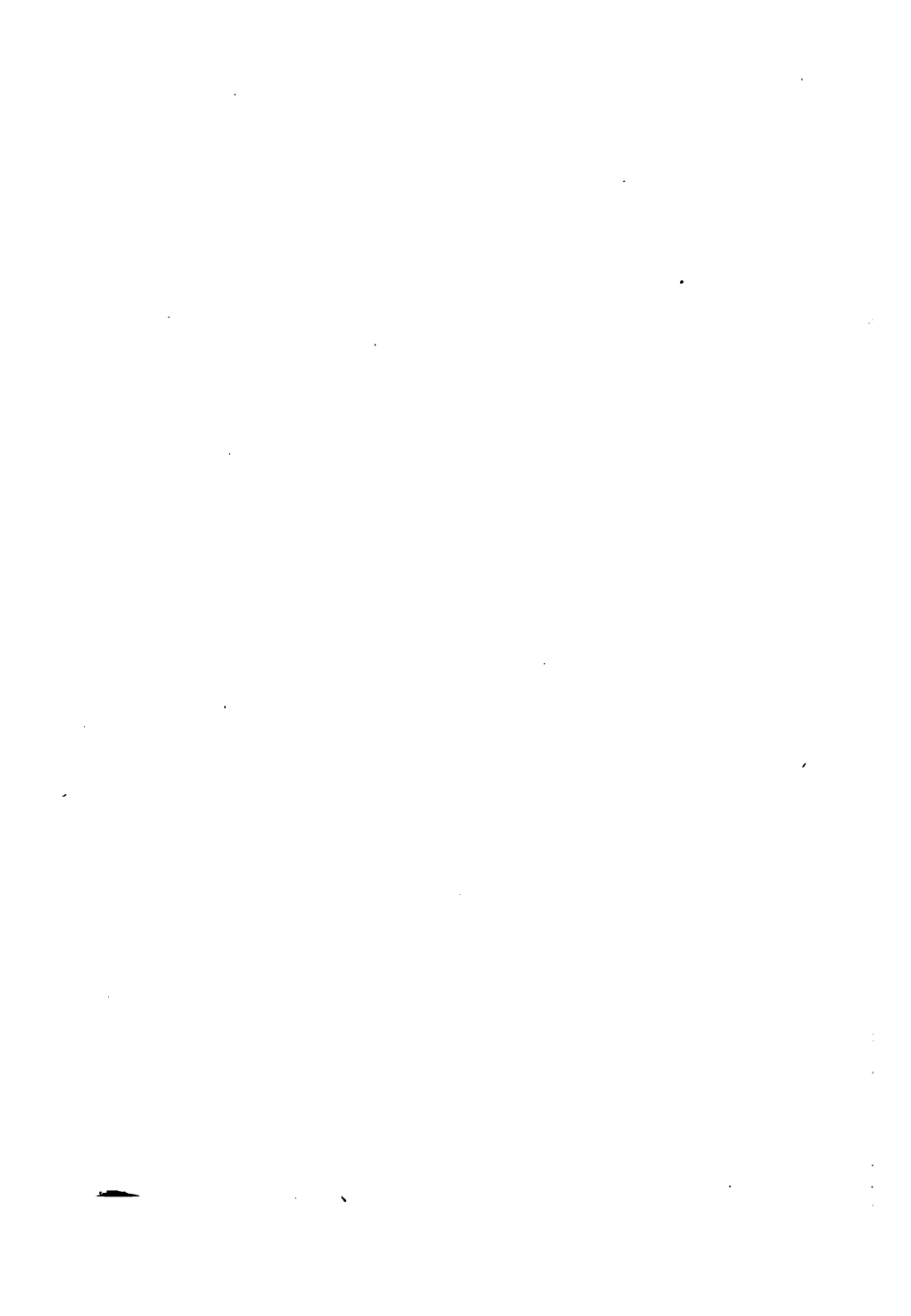
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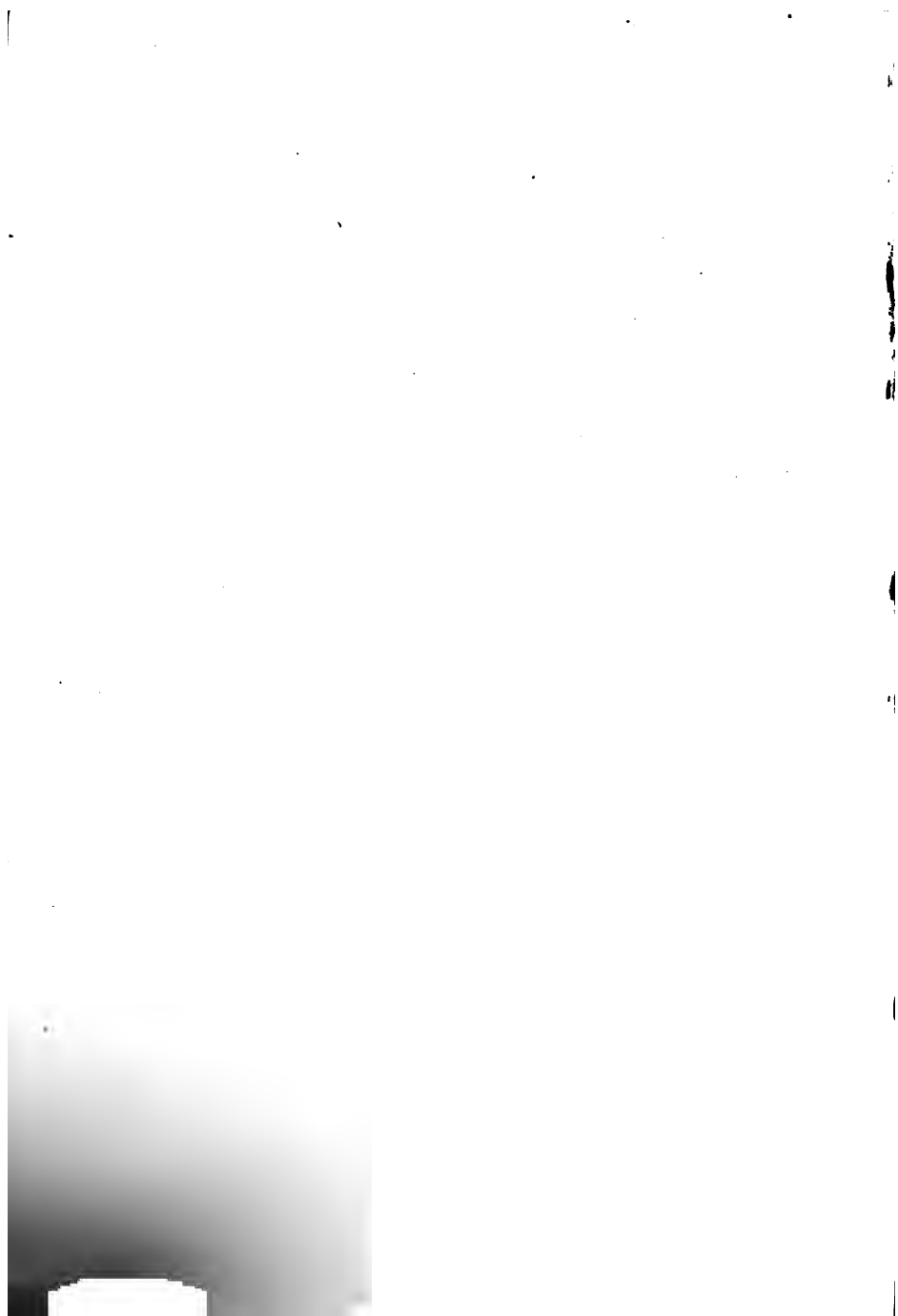
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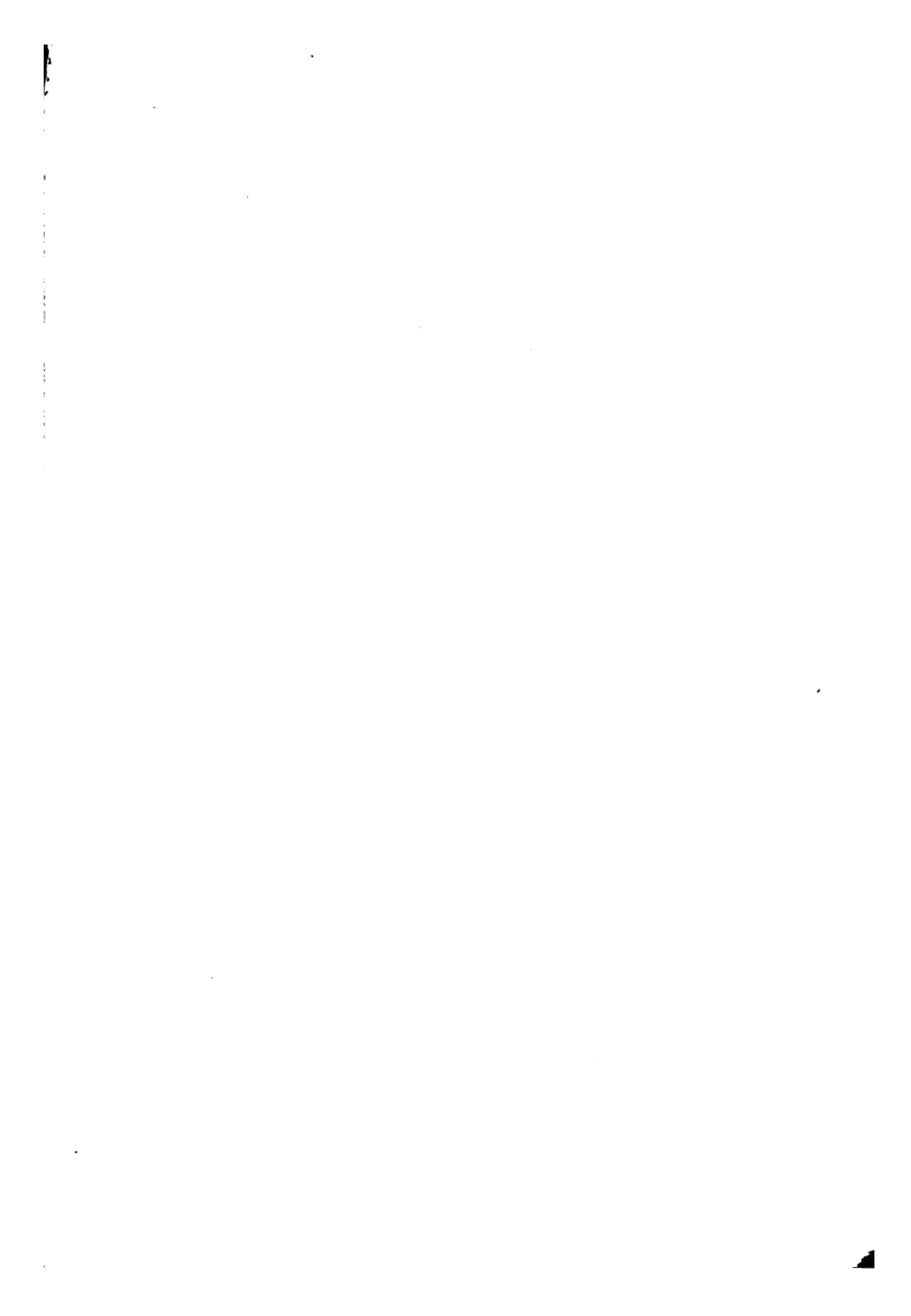


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A YEAR IN A COAL-MINE







PORTRAIT OF THE AUTHOR



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BY
JOSEPH HUSBAND



BOSTON AND NEW YORK
HOUGHTON MIFFLIN COMPANY
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A YEAR IN A COAL-MINE

I

THE NEW MAN

TEN days after my graduation from Harvard I took my place as an unskilled workman in one of the largest of the great soft-coal mines that lie in the Middle West. It was with no thought of writing my experiences that I chose my occupation, but with the intention of learning by actual work the "operating end" of the great industry, in the hope that such practical knowledge as I should acquire would fit me to follow the business successfully. That this mine was operated in direct opposition to the local organization of union labor and had won considerable

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notoriety by successfully mining coal in spite of the most active hostility, gave an added interest to the work. The physical conditions of the mine were the most perfect that modern engineering has devised: the "workings" were entirely electrified; the latest inventions in coal-mining machinery were everywhere employed, and every precaution for the safety of the men was followed beyond the letter of the law.

It was half-past six on a July morning when the day-shift began streaming out of the wash-house: some four hundred men, — white, black, and of perhaps twenty-eight nationalities, — dressed in their tattered, black, and greasy mine-clothes. The long stream wound out of the wash-house door, past the power-house where the two big generators that feed the arteries of the great mine all day long with its motive

power were screaming in a high, shrill rhythm of sound,— past the tall skeleton structure of the tippie-tower, from which the light morning breeze blew black clouds of coal-dust as it eddied around the skeleton of structural iron-work,— to a small house at the mine-mouth, sheathed in corrugated iron, where the broken line formed a column, and the men, one by one, passed through a gate by a small window and gave their numbers to a red-faced man who checked down in a great book the men who were entering the mine.

From the window we passed along to a little inclosure directly above the mouth of the main hoisting-shaft. Sheer above it the black tower of the tippie pointed up into the hot, blue morning sky; and the dull, dry heat of the flat Illinois country seemed to sink down around it. But from the square, black mouth of the shaft a strong,

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steady blast of cool air struck the faces of the men who stood at the head of the little column waiting for the next hoist. On the one side of the shaft-mouth, long lines of empty railroad cars stretched out beyond into the flat country, each waiting its turn to be filled some time during the day with coal that would come pouring down over the great screens in the tippie; and on the other side of the shaft-mouth, under the seamed roof of the building where the checker wrote down the numbers of the day-shift, sat the hoisting engineer—a scrawny, hard-faced man with a mine-cap pushed back from his forehead.

Beside him was the great drum on which the long steel cables that lifted and lowered the hoisting-cage were rapidly unwinding, and in his hand he held a lever by which he controlled the ascent or descent of the “cage.” The first cage had

been lowered, and as I watched him and the dial before him, I saw his hand follow his eye, and as the white arrow passed the 300-foot level, the hand drew back a notch and the long, lithe wire began to uncoil more slowly. Three hundred and fifty feet — and another notch — and as the arrow reached near the 400-foot mark, his foot came down hard on the brake, and a minute later a bell at his elbow sounded the signal of the safe arrival of the hoist. A minute, and another signal; and then, releasing his foot from the brake, and pulling another lever toward him, the drums, reversed, began to re-wind; and as the arrow flew backwards, I realized that the cage was nearing the top, — the cage on which a minute later I was to make my descent as a "loader" into one of the largest, and perhaps most famous, of the vast soft-coal mines that lie in our Middle States.

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As the thin cables streamed upward and over the sheave-wheels above the shaft and down to the reeling-drums, I looked at the men about me and felt a sudden mortification at the clean blue of my overalls, and the bright polish on my pick and shovel. A roar at the shaft-mouth, the grind of the drums as the brakes shot in, and the cage lifted itself suddenly from the shaft.

The cage, or elevator, on which the men were lowered into the mine, was a great steel box divided into four superimposed compartments, each holding ten men; and I stood, with nine others, crowded on the first or lowest deck. As the last man pushed into his place and we stood shoulder to shoulder, the hoisting engineer slowly slipped his lever again toward him, and as slowly the cage sank. Then, in an instant, the white-blue of the sky was gone, except for a thin crack below the deck above us,

through which a sheet of white light sliced in and hung heavily in the dusty air of our compartment. The high song of the generators in the power-house, the choking puffs of the switch-engine in the yards, and the noise of men and work which I had not noticed before, I now suddenly missed in the absence of sound. There was a shuffling of feet on the deck above, and again we sank, and this time all was darkness, while we paused for the third deck to fill. Once more—and again for the fourth. Then, as the cage started and the roar of the shoes on the guide-rails struck my ears, I looked at the men about me. They were talking in a whirr of foreign words; and in the greasy yellow light of their pit-lamps, which hung like miniature coffee-pots in the brims of their caps, the strong, hard lines of their faces deepened. The working day was begun.

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As the cage shot down, the wall of the shaft seemed to slip up, and from its wet, slimy surface an occasional spatter of mud shot in on the faces of the miners. Strong smells of garlic, of sweat, and of burning oil filled the compartment, and the air, which sucked up through the cracks beneath our feet as though under the force of a piston, fanned and pulled the yellow flames in the men's caps into smoking streaks. Then I felt the speed of the "hoist" diminish. A pressure came in my ears and I swallowed hard; and a second later, a soft yet abrupt pause in our descent brought me down on my heels. The black wall of the shaft before me suddenly gave way and we came to a stop on the bottom of the mine.

It was cool, and after the heat of a July morning, the damp freshness of the air chilled me. With dinner-pails banging

against our knees we pushed out of the hoist; and as the men crowded past me, I stood with my back against a great timber and looked around me. Behind, the hoist had already sunk into the "sump," or pit, at the bottom of the shaft, in order that the men on the second compartment might pass out into the mine; and a second later they swarmed by me — and still I stood, half-dazed by the roar of unknown sounds, my eyes blanketed by the absence of light, and my whole mind smothered and crushed. I was standing just off the main entry or tunnel of the mine, which began on my left hand out of blackness and passed again, on my right, into a seeming wall of darkness. The low, black roof, closely beamed with great timbers, was held by long lines of great whitewashed tree-trunks. A few electric lights shone dimly through their dust-coated globes, and the

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yellow flames from the men's pit-lamps, which had flared so bright in the compartment of the hoisting-cage, seemed now but thin tongues of flame that marked rather than disclosed the men.

Out of the blackness on the left, two tracks passed over a great pit and stretched on into the blackness on the right, as though into the wall of the coal itself. Then, far off, a red signal-light winked out and made distance visible; and beyond it came the sound of grinding wheels; there was the gleam of a headlight on the steel rails. The ray grew larger and two yellow sparks above it flamed out into pit-lights. A train was coming out of the entry and I waited until it should pass. With a grind of brakes it suddenly loomed out of the blackness and into the dull haze of light at the shaft-bottom. With a roar it passed by. The locomotive, a great iron box, was built like

a battering-ram, the headlight set in its armor-plated bow, and behind, on two low seats, as in a racing automobile, sat the motorman and the "trip-rider," or helper, the motorman with one hand on the great iron brake-wheel, the other on his controller, and the trip-rider swinging on his low seat, half on the motor and half over the coupling of the rocking car behind, clinging to the pole of the trolley. Their faces were black with the coal-dust, — black as the motor and their clothing, — and from their pit-lamps the flames bent back in the wind and streamed out straight along their cap-tops. Low above the head of the trip-rider the wheel on the trolley streaked out sudden bursts of greenish-white sparks along the wire; and as the train passed by, the roar of the locomotive gave place to the clattering of the couplings of the long string of stocky cars, each heaped high

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with its black load of coal. Some one seized me by the elbow.

“What’s yer number?” he asked.

“419.”

“Loader? New man?”

I nodded.

“Come along with me.”

He was a tall, thin man, who walked with his head thrown forward and his chin against his chest as though in constant fear of striking the low beams overhead. I followed him, stumbling rather clumsily over the broken coal beside the track. The train had come to a stop over the pit between the rails, and men with iron bars were beating loose the frogs and releasing the hopper-bottoms of the cars. Heavy clouds of fine coal-dust poured up from the cars as the coal roared down into the bins; and the clanking of metal, the crash of falling coal, and the unintelligible shouting of the

foreigners, filled the entry with a dull tumult of sounds. Dodging the low trolley-wire which hung about five feet above the rails, we crawled across the coupling between two of the cars to the other side of the entry and walked to the left, past the locomotive, where the motorman was still sitting in his low seat, waiting to pull out his train of empty cars into the sudden darkness of the tunnel beyond. Then, for the first time, I learned that mines are echoless, and that sound — like light — is absorbed by the blotter-like walls of the tunnels.

We walked down the entry between the rails, and after a hundred yards turned with the switch in the track sharply to the right, and again on. Sense of direction or angles was lost, and, like the faces in a foreign race of people, where one can see little or no individuality, so here, each corner

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seemed the same, and in a hundred yards I was utterly lost. Above was the smooth, black roof; below, the ties and the rails; and on either side, behind the two long rows of props, the face of the coal-seam, which glittered and sparkled in the light from our pit-lamps like a dull diamond. We talked a little. My companion asked me where I had worked before, how much I knew of mines, and a few other questions; and still we walked on, dodging the low wire that comes level with one's ear, and stumbling over the layer of broken coal that lay strewn here and there between the rails.

The silence was like the darkness—a total absence of sound, rather than stillness, as my first impression of the mine had been that of an absence of light, rather than of darkness. The smoking lights in our caps seemed to press out through the

blackness twenty feet around us, where the light disappeared and was gone. And always in front of us, out of the black darkness, the two long lines of props on either side of the track stepped one by one into the yellow haze of light and sank again into darkness behind us as we walked.

The air was cool and damp, but as we turned the last corner the dampness seemed suddenly gone from it. It was warmer and closer. Here the track swerved up from one of the main tunnels into a "room," and at the end, or "heading" of this room, which we reached a few minutes later, empty and waiting for its first load, stood one of the square cars which I had seen before at the mine-bottom and which we passed several times on sidings by the track. The car was pushed up to the end of the track and its wheels "spragged" by two blocks of coal. Here

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the tunnel suddenly ended, and from the blank, back "face" a rough, broken pile of coal streamed down on both sides of the car and reared up before it against the roof.

"Just shovel 'er full, then wait till the motor takes her out and sends in an empty, and fill that one. I'll look in on you once in a while and see how you're getting along."

Then he turned and walked down the track and left me in the dim light of my single pit-lamp.

II

LOADING COAL WITH A GREEK BUDDY

IN the first days of coal-mining—as in many mines to-day where modern methods have not superseded those of old-time miners—a man did all the work. With his hand-drill he bored into the face of the coal at the head of his room, or entry, and from his keg of powder he made long cartridges and inserted them into his drill-holes. Then, when the coal was blasted down, and he had broken it with a pick, he loaded it with his shovel into a car; and trimming square the face of the tunnel, propping when necessary, he pushed on and on until he broke through and joined the next tunnel or completed the required length of that single entry.

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But to-day these conditions are, in most instances, changed. The work begins with the "machine-men," who operate the "chain-machines." In order that the blast may dislodge by gravity an even block of coal the dimensions of the cross-section of the tunnel, these men cut with their machines a "sump-cut," or, in other words, carve out an opening level with the floor, about six inches high and six feet deep at the end of the tunnel. The machines — which are propelled by electricity — consist of a motor and a large oblong disk, about which travels an endless chain containing sharp steel "bits" or picks. The machine is braced, the current turned on, and the disk advanced against the coal, automatically advancing as the bits grind out the coal. As soon as the machine has entered to the full six feet, the disk is withdrawn and the cut continued until it extends across the entire face.

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In the evening the drillers, with their powerful air-drills, bore a series of five or six six-foot "shot-holes," four along the roof, and two on each side for the "rib-shots." Then a third crew of men, the "shot-firers," fill the deep drill-hole with long cartridges of coarse black powder, and blast down the coal, which falls broken and crumbled into the cut prepared by the machine-men. In the morning, when the ever-moving current of air, forced into the mine by the fan at the mouth of the air-shaft, has cleared away the dust and smoke, the loaders enter the mine and all day long load into the ever-ready cars the coal that has been blasted down, until the "place" is cleaned up, and their work is done. Then they move on to another "place," and so the work goes on in a perfect system of rotation.

My companion had told me, as we walked

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from the mine-bottom, that his name was Billy Wild. "Call me Billy," he said; and as we walked down the track to the main entry, he turned and called over his shoulder, "You're in Room 27, Third West South. That's where you are, if you want to know." The light in my lamp was burning low, and I sat down on a pile of coal beside the track, lifted it out of the socket in my cap, and pried up the wick with a nail which one of the men "on top" had given me for the purpose. Then I stripped to the waist and began to load, shovelful after shovelful, each lifted four feet and turned over into the waiting car, for two long hours, sometimes stopping to break with my pick great blocks of coal that were too large to lift, even with my hands. Then finally, lumps of coal began to show above the edge of the car, and I "trimmed" it, lifting some of the larger pieces to my

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knees, then against my chest, and then throwing them up on the top of the pile.

The noise of the shovel scraping against the floor and the clatter of the coal as the great pile slid down and filled each hole that I dug out at its foot, filled the tunnel with friendly sounds; but when the car was loaded and I slipped on my coat and sat down on a pile of fine coal-dust beside the track to wait, silence suddenly submerged me. I could hear my heart beat, and curious noises sang in my ears. Up in the roof, under the stratum of slate above the coal, came a trickling sound like running water — the sound of gas seeping out through the crevices in the coal. I was wet with sweat, and my face, hands, and body were black where the great cloud of dust which my shovel had created, had smeared my wet skin. Dull pains in the small of my back caught me when I moved, and every

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muscle in my body ached. (In a week my hands had blistered, the blisters had broken, and then over the cracked flesh ingrained with coal-dust healing callouses had begun to form.)

Then, far off in the distance, came a muffled, grinding sound that grew louder and louder, — a sound that almost terrified. A dull, yellow light, far down in the mouth of the room, outlined the square of the tunnel, and then, around the corner came the headlight of the electric “gathering” or switching locomotive, and above it, the bobbing yellow flames of two pit-lamps. With a grinding roar, the motor struck the up-grade and came looming up the tunnel, filling it with its bulk. There was sound and the silence was gone. The coupling of the locomotive locked with the coupling of the waiting car, and they rumbled away. Once more the locomotive

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came, this time with an "empty" to be filled. In the old days, mules were used to "gather" the loaded cars, and, in fact, are still employed in most mines to-day; but electricity permits bigger loads, and the dozen or two of mules that lived in the mine were used only where it was impossible to run the locomotive.

At the end of the week I was given a companion, or "buddy." Our lockers in the wash-house were near together, and we usually went down on the same hoist; but some mornings I would find Jim ahead of me, waiting by the scale-house. Jim rarely took the full benefit of the wash-house privileges, and morning found him with the dirt and grime of the work of the previous day still on his face. He was a Greek, short, with a thin, black moustache, which drooped down into two "rat-tail" points. Around each eye a heavy black

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line of coal-dust was penciled, as though by an actor's crayon. His torn black working clothes, greasy with oil dripped from his pit-lamp, hung on him like rags on a scare-crow. From the scale-house we walked up the now familiar entries in "Third West South" to the room where we worked, and dug out our picks and shovels from under a pile of coal where we had hidden them the night before. Then in the still close air of the silent room we began each morning to fill the first car.

Down in the scale-house, where the cars were hauled over the scales set in the track, before being dumped into the bins between the rails, Old Man Davis took the weights; and when the loader's number—a small brass tag with his number stamped upon it—was given to him, he marked down opposite it the pounds of coal to the loader's credit; and so each day on the

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great sheet, smootched with his dusty hands, stood a record of each man's strength measured in tons of coal.

When Jim and I worked together, we took turns hanging our numbers inside the car, and each night we remembered to whose credit the last car had been, and the next morning, if my number had been hung in the last car of the day before, Jim would pull one of his tags out of his pocket and hang it on the hook just inside the edge of the empty car. Then, he on one side and I on the other, we worked, shovelful after shovelful, until the coal showed above the edge. And then came the "trimming" with the great blocks that had to be lifted and pushed with our chests and arms up on the top of the filled car.

Time went slowly then, for we could load a car together in less than an hour; and sometimes it took an hour and a half

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before the "gathering" motor would come grinding up into the room to give us an "empty." In those long half-hours we would sit together on a pile of coal-dust beside the track and try to talk to each other.

Jim was a Greek, and from what I was able to gather, he came from somewhere in the southern part of the peninsula. I remembered a little Homer, and I often tried stray words on him; but my pronunciation of the Greek of ancient Athens was not the Greek of Jim Bardas; and although he recognized attempts at his own tongue and oftentimes the meaning of the words, it was not until we discovered a system of writing that we began to get along. Mixed in with the coal that had been blasted down by the shot-firers the night before, we occasionally found strips of white paper from the cartridges. We

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always saved these and laid them beside our dinner-pails; and when the car was filled and we had sat down again in the quiet beside the track, we would take our pit-lamps out of our caps and, rubbing our fingers in the greasy gum of oil and coal-dust that formed under the lamp-spout, we would write words with our fingers on the white strips of paper: *ἄνθρωπος, ἵππος, Ἕλληνες*.

Jim knew some English, the word for coal, car, loader — and he learned that my name was Joe, and called me “My friend,” and “buddy.” Then sometimes after the fascination of writing words had worn away, we would sit still and listen to the gas or for the approach of the motor; and sometimes when the wicks in our lamps had burned low, I would take out of my pocket the round ball of lamp-wick and, like old women with a skein of yarn, we

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would wind back and forth, from his fingers to my own, sixteen strands of lamp-wick; and then, tying the end in a rude knot and breaking it off, stick the skein of wick down the spout of the lamp until only the end remained in sight. Next, lifting the little lid on the top, we would fill the body with oil, shaking it until the wick was thoroughly soaked so that it would burn.

III

AN UNDERGROUND CITY

THERE was comparatively little gas in the mine. Each morning, as we entered our room, we made a rough test for gas, for occasionally during the night some door down in the entry was accidentally left open and the air-current, short-circuited, might fail to reach up into the room and clean out the ever-generating gas. And so, as we left the entry, we would take our lamps from our caps and, walking one before the other, holding them out before us and slowly lifting them above our heads, watch to see if a sudden spurt of blue flame from the pit-lamps would disclose the presence of "fire-damp," the most feared of all mine-gases.

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There is always some gas up under the roof at the head of a room or an entry, and when the cars were loaded we would sometimes burn it out, holding our lamps high up against the roof until the gas up in the end of a drill-hole, or in a hollow of a rock, burst suddenly into a soft blue and yellow flame that puffed out against the roof and down toward our hands. There was never much of it, but once in a while where the drill bored through into a pocket, there was more gas than the men anticipated; and twice I have seen men come staggering down the entry, holding their faces in their hands, when the flame had swerved suddenly down and caught them. We could always hear it — the trickling, like water running over pebbles; and sometimes, too, as we sat and waited, we could hear far up in the strata above a sudden crackling as the pressure

of four hundred feet of solid stone bent beneath its weight the supporting timbers and pillars of coal that held up the roof of the mine. Old miners call these noises the "working" of a mine; and often, where the rooms were close together and the walls of coal between them were thin, there was a constant splintering sound and louder noises that would bring us suddenly to our feet in a little panic of fear.

It is not the loading, nor the long hours with the shovel and pick, that grind into the brain; but it is the silence and the waiting, the silence and then the sounds, and then the silence again.

A coal-mine is a vast city in an underground world. Beside the hoisting-shaft, down which the men are lowered into the mine and from which the coal is lifted in great "skips," or more often in the mine-cars themselves, there is the air-shaft.

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These are usually the only two connections between the mine and the outer world. Shaft one, where we worked, was about four hundred feet below the surface, and comprised over seventy-five miles of tunnels laid out by the engineers' transit according to a perfect system for the hauling of the coal and the ultimate mining of the maximum quantity. From the air-shaft to the hoisting-shaft ran the main tunnel, or entry; and parallel and at right angles with this tunnel ran other entries, dividing the mine into great sections.

Down into the air-shaft, every hour of the day and night, an enormous fan in the fan-house at the top of the shaft pumped air into the mine, and by means of many doors, stoppings, and bridges or "overcasts," this strong current of air passed through every mile of tunneling, never

crossing its own path and never stopping, until it again reached the main entry, but this time at the foot of the hoisting-shaft, through which — fouled by the gases, the dust, and impurities of the mine — it poured out, a cold blast in summer, and in winter a pillar of misty vapor that ascended far into the structure of the tippie-tower above the shaft-mouth. To keep this current of air from taking the path of the least resistance and “short-circuiting,” cutting off whole sections of the mine, there was arranged a system of doors which were opened to allow the trains and the mine-cars to pass, and closed again when they had gone through. As an additional precaution to take care of this life-blood circulation, without which work in the mine would be impossible, inspectors — whose duty it was to measure the strength of the current, and to inspect the

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doors and stoppings to see that no part of the mine escaped the cleansing draft—passed constantly from place to place, testing for the presence of gas with their safety-lamps, and ever measuring the volume and flow of the air-current.

And through all this vast system of tunnels ran the great underground electric railway, with its low-hanging wire, its switching-stations, its sidings, and its main belt-line. Small electric locomotives in the various outlying sections of the mine gathered the loaded cars from the rooms where they were filled by the loaders, and made up the trains on sidings near the main belt-line. All day long the large 13-ton locomotives gathered these trains and dragged them past the scale-house—where Old Man Davis checked up the weight of the loaded cars to each man's credit—to the great pit between the rails at the foot

of the hoisting-shaft, where half-naked, blackened Greeks beat open the hopper-bottoms and dropped the coal down into the waiting bins below. And from the bins, with automatic regularity, giant buckets or "skips" lifted the coal four hundred and six feet upward to the open air, and then fifty feet more to the top of the tipple-tower, where like a tumbling torrent it poured down over the sorting-screens into the railroad cars beneath.

There were four hundred men on the day-shift; and the loaders were, for the most part, Bulgarians and Greeks. Few spoke English, and few had been many years in America. Some worked and saved in order to return at a future day to the Old Country and purchase with their earnings an acre or two that would give them a position in the little village of their birth. Others plodded on, sending monthly re-

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mittances to their families and hoping against hope that they too might some day return. Others, with less strong ties of home and country, spent their earnings prodigally on gay clothes from the Company Store, and much beer in the evening at the long boarding-houses half a mile from the mine.

There was Big John, a huge Bulgarian giant, who had figured that a dollar a day was sufficient to give him all that life offered. His great body was able to earn twice that sum during the working day, for we were paid entirely by piece-work, and a loader, at the rate of twelve and a half cents a ton, might earn as high as \$2.25 a day. But he was lazy, and learning that the only excuse for laziness was sickness, each day at two o'clock in the afternoon, Big John presented himself to Pete Christofalus, the "cage-boss," at the

mine-bottom, and rubbing his stomach with one hand, told him, "Me sick; thees place no got steam, no can work," and demanded that he be allowed to leave the mine. There were others who would work at night, in addition to the day, if they were permitted. An old Russian and his son, who would enter the mine on the earliest shift in the morning, worked all day long, enraged and clamoring for cars if they did not receive empties immediately, and sometimes the track-men on the night-shift would find them loading all the empty cars that they could find and leaving late at night, to retire alone to the corner of the room at the boarding-house in which they lived.

Once or twice on Greek Church days the white starched kilts and braided jackets of Macedonia gave color to the dingy streets, and once came a half-dozen Egyp-

tians who added their copper faces to our medley of nations. The head men were Americans, Scotchmen, and Englishmen. I can remember how "Uncle Jimmy" wept on the Fourth of July when the band played "Dixie," and how quiet steel-eyed Sandy would take his fiddle (Harry Launder had been in St. Louis that winter), and marching up and down the little parlor of his house, stroke out with no tender touch, but with a wealth of feeling, "I Love a Lassie."

"Little Dick," interpreter, spoke ten tongues, and read Virgil. When he was drunk you might guess that he had been once a gentleman, and that there was a reason for his leaving Austria; dull sobriety vulgarized him.

In every tunnel ran the long, thin pipe along the rail, through which came the compressed air to drive the air-drills of

the night-shift. The air in the room-headings was supposed to be good enough for men to work in if it was free from gas, but sometimes when the smoke from the pit-lamps and the smells of sweat and garlic, and the fine clouds of coal-dust that rose against the roof with every shovel-ful, made it rank and choking, we would take our picks, and working loose the valve in the air-pipe, hold our hands and faces in the strong, cool stream that seemed to come, driven by an unknown power, from a world above.

The temperature in a mine is about the same, year in and year out; cool in summer, and warm in winter, in comparison to the outer air; but when the exertion of labor brought the sweat streaming out from every pore, the water in our dinner-buckets seemed sometimes almost too warm to drink, and it was Jim who taught

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me to loosen the valve on the air-pipe and, propping my dinner-bucket with a chunk of coal against the vent, chill the water with a blast of compressed air.

Day after day we loaded, and one day when the great pile of coal that had been shot down by the night-men had been shoveled into the cars and dragged away, and we had attacked the loosened blocks at the head of the room with our picks, there was a hollow sound, and a minute later my pick struck through and we found that we had broken into the heading of a room driven from another entry in the opposite direction from ours; and half an hour later we were talking to two Greeks who had climbed through the opening.

Up in the wash-house, by a locker near to my own, I often chatted with another loader at the beginning or at the end of the day. We went down on the same hoist

one morning, and an hour later, as my first car stood half-filled, the section boss came tramping noisily up the track and told us that the shift was called off. As we reached bottom, a motor came grinding down the track, and in the pale light of the pit-lamps and the flashing green of the trolleys, we saw a long, white bundle, wrapped in the coarse canvas that is used to build stoppings for the ventilation system. It was the man whom I had known in the wash-house—the man who, an hour before, had gone with me into the mine. We had parted at the mine-bottom, and he had gone up to his room, a half-mile from the shaft; a room in which the track, turning from the main entry, ran up at a fairly high grade to the heading. There he found an empty car waiting for him—one of the great, heavy, square cars that stood ready each morning to begin the day. Climbing

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up, perhaps to hang his brass tag inside, he had kicked loose from under the wheel the block of wood that held it, or perhaps the weight of his body had moved the car; at all events, it had become loosened and had started down the track. Catching a piece of wood in his hand, he had followed it, vainly trying to block its wheels. At the foot of the room, where it joined the main entry at right angles, the track ran within a few inches of the solid wall of coal. In the darkness, the man had misjudged his distance and the car had caught him between the coal and its side, and had passed on.

That evening, as we walked home to the boarding-house, we saw a dozen men walk slowly from the Company Hospital carrying on their shoulders a long white-pine box. Perhaps he had hoped some day to return to his village; perhaps he sent

monthly remittances to his family in some obscure town in the Croatian highlands; or perhaps he had come alone, seeking a fortune in a new land.

IV

DANGERS OF THE MINE

TO the ear accustomed to the constant sound of a living world, the stillness of a coal-mine, where the miles of cross-cuts and entries and the unyielding walls swallow up all sounds and echo, is a silence that is complete; but, as one becomes accustomed to the silence through long hours of solitary work, sounds become audible that would escape an ear less trained. The trickling murmur of the gas; the spattering fall of a lump of coal, loosened by some mysterious force from a cranny in the wall; the sudden knocking and breaking of a stratum far up in the rock above; or the scurry of a rat off somewhere in the darkness—strike on the ear

loud and startlingly. The eye, too, becomes trained to penetrate the darkness; but the darkness is so complete that there is a limit, the limit of the rays cast by the pit-lamp.

There is a curious thing that I have noticed, and as I have never heard it mentioned by any of the other men, perhaps it is an idea peculiar to myself; but on days when I entered the mine with the strong yellow sunlight and the blue sky as a last memory of the world above, I carried with me a condition of fair weather that seemed to penetrate down into the blackness of the entries and make my pit-lamp burn a little more brightly. On days when we entered the mine with a gray sky above, or with a cold rain beating in our faces, there was a depression of spirits that made the blackness more dense and unyielding, and the lights from the lamps seemed less cheerful.

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Sometimes the roof was bad in the rooms, and I soon learned from the older miners to enter my room each morning testing gingerly with my pit-lamp for the presence of gas and reaching far up with my pick, tapping on the smooth stone roof to test its strength. If the steel rang clean against the stone, the roof was good; but if it sounded dull and drummy, it might be dangerous. Sometimes, when the roof was weak, we would call for the section boss and prop up the loosened stone; but more often, the men ran their risk. We worked so many days in safety that it seemed strange that death could come; and when it did come, it came so suddenly that there was a surprise, and the next day we began to forget.

I had heard much of the dangers that the miner is exposed to, but little has been said of the risks to which the men through

carelessness subject themselves. Death comes frequently to the coal-miners from a "blown-out shot." When the blast is inserted in the drill-hole, several dummy cartridges are packed in for tamping. If these are properly made and tamped, the force of the explosion will tear down the coal properly, but if the man has been careless in his work, the tamps will blow out like shot from a gun-barrel, and igniting such gas or coal-dust as may be present, kill or badly burn the shot-firers. The proper tamping is wet clay, but it is impossible to convince the men of it, and nine out of ten will tamp their holes with dummies filled with coal-dust (itself a dangerous explosive) scooped up from the side of the track. Again, powder-kegs are sometimes opened in a manner which seems almost the act of an insane man. Rather than take the trouble to unscrew

the cap in the head of the tin powder-keg and pour out the powder through its natural opening, the miner will drive his pick through the head of the keg and pour the powder from the jagged square hole he has punched. And these are but two of the many voluntary dangers which a little care on the part of the men themselves would obviate.

A mine always seems more or less populated when the day-shift is down, for during the hours of the working day, in every far corner, at the head of every entry and room, there are men drilling, loading, and ever pushing forward its boundaries. At five o'clock the long line of blackened miners which is formed at the foot of the hoisting-shaft, begins to leave the mine; and by six o'clock, with the exception of a few inspectors and fire-bosses, the mine is deserted.

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The night-shift began at eight, and it was as though night had suddenly been hastened forward, to step from the soft evening twilight on the hoist, and, in a brief second, leave behind the world and the day and plunge back into the darkness of the mine.

We were walking up the track from the mine-bottom toward Six West South,— Billy Wild, Pat Davis, two track-repairers, and I. As we turned the corner by the run-around, there came suddenly from far off in the thick stillness a faint tremor and a strong current of air. The “shooters” were at work. For a quarter of a mile we walked on, stopping every once in a while to listen to the far-off “boom” of the blasts that came through the long tunnels, faint and distant, as though muffled by many folds of heavy cloth. We pushed open the big trappers’ door just beyond

where First and Second Right turn off from the main entry, and came into the faint yellow glow of a single electric lamp that hung from the low beamed roof.

Beside the track in a black niche cut in the wall of coal, two men were working. A safe twenty feet from them their lighted pit-lamps flared where they were hung by the hooks from one of the props. Round, black cans of powder tumbled together in the back of the alcove, a pile of empty paper tubes, and great spools of thick, white fuse lay beside them. We sat down on the edge of the track at a safe distance from the open powder, and watched them as they blew open the long, white tubes and with a battered funnel poured in the coarse grains of powder until the smooth, round cartridge was filled, a yard or two of white fuse hanging from its end. In fifteen minutes they had finished, and one

of the men gathered in his arms the pile of completed cartridges and joined us in the main entry.

A few minutes later, as we neared the heading, a sudden singing "boom" came down strongly against the air-current and bent back the flames in our pit-lamps. Far off in the blackness ahead, a point of light marked the direction of the tunnel; another appeared. Suddenly, from the thick silence, came the shrill whine of the air-drills. A couple of lamps, like yellow tongues of flame, shone dimly in the head of the tunnel and the air grew thick with a flurry of fine coal-dust. Then below the bobbing lights appeared the bodies of two men, stripped to the waist, the black coating of dust that covered them moist with gleaming streaks of sweat.

"How many holes have you drilled?" yelled Wild, his voice drowned by the

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scream of the long air-drill as the writhing bit tore into the coal.

There was a final convulsive grind as the last inch of the six-foot drill sank home, then the sudden familiar absence of sound save for the hiss of escaping air.

“All done here.”

Slowly the two men pulled the long screw blade from the black breast of the coal, the air-hose writhing like a wounded snake about their ankles. The driller who had spoken wiped his sweaty face with his hands, his eyes blinking with the dust. He picked up his greasy coat from beside the track and wrapped it around his wet shoulders.

“Look out for the gas,” he shouted.
“There is a bit here, up high.”

He raised his lamp slowly to the jagged roof. A quick blue flame suddenly expanded from the lamp and puffed down at him as he took away his hand.

In the black end of the tunnel six small holes, each an inch and a half in diameter and six feet deep, invisible in the darkness and against the blackness of the coal, marked where the blasts were to be placed. On the level floor, stretching from one wall of the entry to the other, the undercut had been ground out with the chain-machines by the machine-men during the afternoon, and as soon as the blasts were in and the fuses lighted, the sudden wrench of these charges would tear down a solid block of coal six feet deep by the height and depth of the entry, to fall crushed and broken into the sump-cut, ready for the loaders on the following morning.

Selecting and examining each cartridge, the shooters charged the drill-holes. Two cartridges of black powder, tamped in with a long copper-headed rod, then dum-

mies of clay for wads, leaving hanging like a great white cord from each charged drill-hole a yard of the long, white fuse.

We turned and tramped down the tunnel and squatted on the track a safe fifty yards away. Down at the end of the tunnel we had just deserted bobbed the tiny flames of the lights in the shooters' pit-caps. There was a faint glow of sparks. "Coming!" they yelled out through the darkness, and we heard them running as we saw their lights grow larger. For a minute we silently waited. Then from the far end of the tunnel, muffled and booming like the breaking of a great wave in some vast cave, came a singing roar, now like the screech of metal hurled through the air, and the black end of the tunnel flamed suddenly defiant; a solid square of crimson flames, like the window of a burning house; and a roar of flying air drove past

us, putting out our lights and throwing us back against the rails.

“It’s a windy one,” yelled Wild. “Look out for the rib-shots.”

Like a final curtain in a darkened theatre, a slow pall of heavy smoke sank down from the roof, and as it touched the floor, a second burst of flame tore it suddenly upward, and far down the entry, the trappers’ door banged noisily in the darkness. Then we crept back slowly, breathing hard in an air thick with dust and the smell of the burnt black powder, to the end of the tunnel, where the whole face had been torn loose — a great pile of broken coal against the end of the entry.

Often, bits of paper from the cartridges, lighted by the blast, will start a fire in the piles of coal-dust left by the machine-men; and before the shooters leave a room that has been blasted, an examination must

be made in order to prevent the possibility of fire.

All night long we moved from one entry to another, blasting down in each six feet more of the tunnel, which would be loaded out on the following day; and it was four in the morning before the work was finished.

It was usually between four and five in the morning when we left the mine. As we stepped from the hoist and left behind us the confining darkness, the smoky air, and the sense of oppression and silence of the mine below, the soft, fresh morning air in the early dawn, or sometimes the cool rain, seemed never more refreshing. One does not notice the silence of a mine so much upon leaving the noise of the outer world and entering the maze of tunnels on the day's work, as when stepping off the hoist in the early morning hours

when the world is almost still: the sudden sense of sound and of living things emphasizes, by contrast, the silence of the underworld. There is a noise of life, and the very motion of the air seems to carry sounds. A dog barking half a mile away in the sleeping town sounds loud and friendly, and there seems to be a sudden clamor that is almost bewildering.

We were walking down the north entry one early morning and had just passed through the last brattice door when Joe Brass, one of the shot-firers, stopped, suddenly alert and silent, and held up his hand. Sound means but little in a mine, and eyes can but rarely detect danger.

“Do you smell anything?” he asked.

We sniffed the cool air as it fanned past us through the door that we still held open. Almost imperceptible, a curious,

foreign odor seemed to hang in the moving current.

“Wood-smoke,” said one of the men.

We turned and walked back and closed the door behind us. The smell of the smoke defined itself as we walked forward. Through the next door it hung strong in the air, and with it the oily smell of burning coal. Then a light appeared down the entry, and from its jerky motion, we knew that the man was running before we heard his feet clumping over the rough ties.

“There’s a fire in Room 26,” he yelled, before we could see him. The word had already reached bottom and as we paused at the turning of the entry, trying to see whether to turn to the right or the left, there was a sudden roar behind us, and the glow of a locomotive headlight. As we waited, the locomotive came rattling

down the tunnel, half a dozen men crouched low on its black frame, and behind it, on a single flat car, the great steel water-tank that was reserved for such emergencies. Shouting questions, we swung on behind. The motor followed the switch and turned sharply down to the right. Through the next door the smoke became suddenly thick. A strong smell, almost as of burning oil; the heavy, pungent smell of soft coal on fire. In the dead air of the entry it hung still and motionless, like yellow fog, and as we jumped off the truck and ran down the entry behind the locomotive, we crouched low to keep our eyes clear, for there were still a couple of feet of clean air along the bottom of the tunnel. From ahead of us came the sound of voices and then, through the smoke, we saw the lights of the men, like yellow tongues of flame, detached from their bodies, which were

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hidden in the thick blanket of smoke. The coal in one of the rooms off the main entry which the shooters had blasted earlier in the night was on fire, and the heat and smoke were too intense to allow the men to reach it with the water. Shouting at each other in the blinding smoke and darkness, with the dull, steady heat of the invisible fire bringing the sweat in streams from our bodies, we worked to cut off the room from the rest of the mine by building across its broad mouth, where it joined the main entry, a solid stopping of wood and plaster. A dozen men, in minute relays, held a long strip of canvas against the roof, while the rest of us pushed and wedged into place between the floor and the low roof, a string of props or posts across the room mouth. As the smoke thickened and the heat grew more intense, the relays became shorter and we suddenly

dived from the dense, choking air above, to lie flat along the floor, sucking in the cool, clean air that lay above the water beside the tracks. In half an hour we had erected a long line of posts, with the canvas nailed against it; and a temporary stopping was effected. By that time a dozen of the timbermen had arrived, and motors had dragged up from the mine-bottom piles of matched boards and sacks of wood-fibre plaster. An hour more and the stopping was reinforced with a solid fence of boards and then, mixing the plaster in the water beside the track and using our hands as trowels, we caulked the seams, the plaster drying quickly against the hot boards. Three hours later the work was done, and the air-current moving steadily down the entry had blown away the last shreds of the thick and choking smoke. In the light of our lamps and lanterns, we

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again examined the long, white wall that we had erected across the room-mouth. A few more handfuls of plaster on cracks through which a thin trickle of smoke still puffed outward; and the work was done. Two months later, when the fire, cut off from the air of the mine, had smothered itself to extinction, the wall was torn down, the gas blown out, and work once more resumed.

V

MINERS' SUPERSTITIONS

IT is natural that a mine should have its superstitions. The darkness of the underworld, the silence, the long hours of solitary work, are all conditions ideal to the birth of superstition; and when the workmen are drawn from many nationalities, it is again but natural that the same should be true of their superstitions.

One night when Carlson, the general manager, was sitting in his office, there was a knock at the door, and two loaders, from the Hartz Mountains, came into the room, talking excitedly, with Little Dick the interpreter. Their story was disconnected, but Carlson gathered the main

facts. They had been working in the north-west corner of the mine, in an older part of the workings, and on their way out that afternoon, as they were passing an abandoned room, they had noticed several lights far up at its heading. Knowing that the room was no longer being worked, and curious as to who should be there, they had walked up quietly toward the lights. Here their story became more confused. There were two men, they insisted — and they were certain that they were dwarfs. They had noticed them carefully, and described them as little men, with great picks, who were digging or burying something in the clay floor at the foot of one of the props. A sudden terror had seized them, and they had not delayed to make further investigation; but on the way out they had talked together and had decided that these two strange creatures

had been burying some treasure: "a pot of gold," one of them argued.

Carlson was interested. The questions and answers grew more definite and more startling. The two men whom they had seen were certainly hump-backed. They were wielding enormous picks, and one of the loaders believed that he had seen them put something into the hole. Then came their request that they might be allowed to go back that night into the mine, and with their own tools go to this abandoned room and dig for the buried treasure. It was against precedent to allow any but the night-shift into the mine, but superstitions are demoralizing, and the best remedy seemed to be to allow them to prove themselves mistaken. An hour later they were lowered on the hoist; and all that night, alone in the silence of the mine, they dug steadily in the heading

of the abandoned room, but no treasure was discovered. All the next night they dug, and it was not until seven nights' labor had turned over a foot and a half of the hard clay of the entire heading that they abandoned their search.

It is the custom of the men, when they leave the mine at the close of the shift, to hide their tools; and the imaginations of the loaders, worked upon by eight hours of solitary work, had doubtless seen in the forms of two of their companions who were hiding their shovels the traditional gnomes of their own Hartz Mountains.

In another part of the mine another superstition was given birth that led to a more unfortunate result. This time it happened among the Croatians, and, unfortunately, the story was told throughout the boarding-houses before the bosses learned

of it, and one morning a great section of the mine was abandoned by the men. Up in the headings of one of the entries — so the story went — lived the ghost of a white mule. As the men worked with the coal before them, and the black emptiness of the tunnel behind, this phantom mule would materialize silently from the wall of the entry, and with the most diabolical expression upon its face, creep quietly down behind its intended victim, who — all unconscious of its presence — would be occupied in loading his car. If the man turned, and for even a fraction of a second his eyes rested upon the phantom, the shape would suddenly disappear; but if he were less fortunate and that unconscious feeling of a presence behind him did not compel him to turn his eyes, the phantom mule would sink his material teeth deep into the miner's shoulder; and death would

follow. It was fortunate, indeed, that the only two men who had been visited by this unpleasant apparition had turned and observed him.

Perhaps it had been the sudden white glare cast from the headlight of a locomotive far down the entry, or perhaps it had been entirely the imagination, but, at all events, a man had come from his work early one afternoon inspired with this strange vision, and the next day another man also had seen it. The story was noised around, and two days later the men stuck firmly to their determination that they would not enter that part of the mine. Fortunately for the superintendent, a crowd of Bulgarians had just arrived from East St. Louis seeking employment. The Croations were sent into another part of the mine to work, a mile from the haunted entries, where there were no unpleasant ghosts of

white mules to disturb their labors; and so long as the mine remained in operation there is no further record of the unpleasant ramblings of this fantastical animal; at least, none of the Bulgarians ever saw it.

With the mule came the ghost of a little white dog; but for some curious reason, although the dog was reported by many to have run out from abandoned rooms and barked at the men as they stumbled up the entry, but little attention was paid to it, and it seemed to possess no particularly disturbing influence.

There were many negroes in the mine, and they, too, had their "h'ants" and superstitions; but these were of a more ordinary nature. In Room 2, Third West South, a sudden fall of rock from the roof had caught two miners. Tons of stone had followed, and in a second, two men had

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been crushed, killed, and buried. Death must have been instantaneous, and months of labor would have been required to recover the bodies, which were probably crushed out of human resemblance; but even years after this happened, Room 2 was one that was carefully avoided by all the negroes, and if it ever became necessary for one of them to pass it alone, he would always go by on the run; for back under the tons of white shale that came down straight across the room-mouth the ghosts of Old Man Gleason and another, whose name was forgotten, still remained — immortal.

It was to prevent the establishment of such superstitions that the shift was always called off for the day if a man was killed in the mine; and the next morning when the men returned to their work, the section boss of that section in which the un-

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fortunate miner had met his death took particular care to place several men together at that place in order that no superstition might grow up around it.

VI

FIRE

IT was about six o'clock in the evening, and the greater part of the day-shift had left the mine. Out in some of the far headings of the workings a few men remained, finishing up their day's work, and down in the motor-pits a dozen men were overhauling one of the big electric locomotives. That day the skips had hoisted from the mine an almost record tonnage. The great underground city, its railroad system, its entire plant, were in perfect order; and, as is often the case, the thought of disaster doubtless never occurred to the men who still remained in its black tunnels.

Old Man Davis, the scale-master, folded

up his report for the day and was walking down the track toward bottom, when he met a trackman who came running out from a cross-cut between the main entries. "Mr. Davis!" he yelled, "come over this way. I think I smell fire in C entry." Half a dozen of us who were sitting on some sacks of plaster, waiting for the hoist to be lowered, jumped up and followed them through the cross-cut and into the parallel entry. It was a "return" for the air-current, and the wind which came pressing against us had passed through the whole east section of the mine before reaching us, and would carry on its current the smoke of any fire that there might be in that part of the mine. We stood on the track for a minute and sniffed the dead, warm air. No one said anything. Then we walked down the track to where First and Second West South turned sharply and at

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right angles to C entry. Again we stopped, and here, of a sudden, strong on the air came the soft, pungent smell of burning wood. A half-hour before the last of the miners had probably come out through this entry, and in those scant thirty minutes whatever fire existed there must have been ignited.

About a quarter of a mile down these two entries, which ran on either side of a third entry, or "air-course," was an "air-split." Here the air from the third tunnel was divided by a door, to pass in diminished volume to the right and to the left. The air passing out of the air-course to the left entered the entry known as Second West South, and as we neared this spot the strong smell of the wood-smoke that was already visible in the air told us that the fire must be in the woodwork of the air-split itself. Then suddenly the

smoke grew thick and enveloped us, and mingled with the smell of burning wood we caught for the first time the oily smell of burning coal. The fire was in the air-split and, fanned by the strong air-current from the air-course behind it, the entire framework and the door itself were in a blaze, and around the walls on either side and beside the track, the coal was already glowing, a red ring of flame.

Defective wiring might have caused the fire, but this was not likely; its location and nature suggested another possibility, but so immediate was the danger that investigation was impossible, and its origin was never conclusively explained.

So rapidly the fire increased that it was now beyond our control with such means of fighting it as were at hand, and, without stopping, a dozen of the men turned and ran back down the entry to get a

motor and the water-carts. Meanwhile, the entry became choking with the heavy smoke. Down in the main bottom, at the foot of the shafts, it now hung in the air like a thin fog, and by the time that one of the big motors came pushing a couple of water-carts down the track, the men at the top of the shafts had detected the smell of smoke, and the alarm of fire was sounded.

The suddenness of the fire, and the fact that practically all of the men, and especially the head men, were at that time at supper in the town, crippled the small force who were endeavoring to stem its rapid march down the entry. Coming strong on the air-current, but a quarter of a mile separated it from the mine-bottom, the vitals of the mine. If the fire reached here, all was lost. By the time the water-carts had arrived, the volume of smoke

was so dense and the heat so intense that their use seemed almost absurd, and immediately an attempt was begun to connect a hose line from the nearest water-pipes. It was almost half an hour before the couplings were made, and, blinded by the now dense smoke, and half-scorched by the heat of the flames, a dozen men endeavored ineffectually to stem the advance of the fire, which now lined the walls of the entry like an open furnace.

For an hour it seemed as though they were holding their own. Down at the mouth of the entry a gang of timbermen were already building a stopping across the mouth of the entry, in case the men with the hose-line found it impossible to check the advance of the fire. Suddenly, Tom Cox, who was holding the nozzle of the first hose, sank to his knees, and in the second that followed, four men beside him

caught their hands to their necks and fell beside him along the track. The water and the fire had generated in the two hundred yards of now burning entry a wall of the invisible "white-damp," and this, driven like the smoke by the air, suddenly overcame the men who were fighting at the edge of the flames. The question of life and death now entered, for the fire — unchecked — was rapidly marching down the tunnel toward the bodies of the unconscious men. From the mouth of the entry, the timbermen, bending low to catch the clean air below the smoke, fought up into the heat and dragged out the bodies of their unconscious companions, and then, with frenzied haste, continued their work on the half-completed stopping.

It was known that in some parts of the mine men were still at work who were unconscious of the fire, and it was neces-

sary to warn them, that they might make their escape. Besides these there was another band of a half-dozen men who had endeavored to reach the fire from the other side, and who, ignorant of the sudden danger, must also be warned. With three men, Charley Swenson determined to visit the working parts of the mine which lay to the left of the burning entry and extended far behind it. Here there were men working. Within half an hour the alarm had been given and the warning party started back. Half a mile from the mine-bottom, the party stopped for an instant as the sound of an explosion reached their ears, and they realized that the gas generated by the burning coal was beginning to explode somewhere in the mine. To them it was no longer a question of saving the mine, but of preserving their own lives.

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Beside the track stood one of the electric locomotives. Swenson noticed it and stopped behind his companions, thinking that by using the locomotive they could get more quickly to bottom. He jumped into the low driver's seat before he noticed that the trolley-pole was turned the wrong way. Stumbling out again, he pulled the pole from the wire and turned it and then crawled back into the driver's seat. As his hand reached for the grip of the controller, a sudden dizziness seized him and he fell forward unconscious on the frame of the machine. The white-damp was penetrating all parts of the mine. A minute later — like a hurried funeral procession — another group of men came stumbling down the entry, dragging two of their comrades who had been overcome by the gas; and to them Swenson owed his life.

The mine-bottom was now filled with smoke, and the deadly gas in diluted quantities hung invisible in the air. Attempts to stem the course of the fire were realized to be useless, and the business now became that of getting the men from the mine and sealing the shafts at the top. Like the officers of a sinking ship, the mine-manager and the pit-boss held their ground at the foot of the man-hoist; and after the last hoist had carried up the remainder of the men who were at bottom, they still waited, blinded in the smoke, for a party of three men who had gone an hour before into some of the more distant workings to carry the warning, and who had not yet appeared. As the smoke grew thicker, they realized how slender was the chance that these men would ever return, but, notwithstanding, they made one attempt to follow them and succeeded in

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groping their way into C entry. The fire was already in the entry mouth, and through the smoke they saw the yellow flames creeping over the "overcast" of the air-course. As they turned back to the hoist, far-off voices came through the smoke, and two of the missing men, dragging the third, came pitching down the entry. A minute later the little party was on the hoist, and the signal from bottom to "hoist away" was given. The last men were leaving the mine.

The brilliancy of the clear autumn night was dimming in the first faint light of the dawn when the work of sealing the shafts began. Up into the cloudless sky, through the tangled steel-work of the tippie, a tall tower of black smoke three hundred feet high poured up into the still air and faded into the dawn. In two hours the black pits were covered, first, with a layer of rails,

and then on this was laid a solid bed of concrete; and two hours later, only a few thin wisps of smoke that poured up through cracks along the edges of the great seal, like steam beneath the lid of a tea-kettle, told of the inferno that was seething in the mine, four hundred feet below.

With the air cut off and the shaft sealed, the fire could live only so long as sufficient oxygen remained to feed the flames, and a consultation of blackened men with drawn, tired faces who gathered in the warehouse office determined that the bottom of the mine had been saved, and that the advance of the flames was already checked and had reached its farthest limit by the cutting off of the supply of air. However, the possibilities were so numerous that all seemed but conjecture. It was impossible to tell how long the fire could live on the air which filled the eighty-six miles of

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tunnels; and so hurried had been the final exit from the workings, on account of the men who had been overcome, that the exact limits of the fire were unknown.

VII

THE DEADLY GASES

AFTER the labor and excitement of the long night, the sudden stopping of activity came like the breaking of a tightly stretched wire. There was nothing to do but wait.

The day after the shafts were sealed, as the realization came that it would be days, weeks, or possibly months before operations were resumed, men began leaving the town. Not the old miners — fortunately — or those who knew the company best, but the shifting population that always takes up the excuse of inactivity to move on to some new field. The men with families, the head men, and those of the better sort remained, and at some time each

day every one in the half-deserted town walked down to examine the seals on the shafts and to ask questions of the superintendent and his assistants, who made hourly tests with thermometers as to the heat of the shafts. From these readings it soon became apparent that the sealing of the shafts had abruptly stopped the advance of the fire, and it was evident from the coolness at the shaft-bottoms — for the thermometers were lowered through small openings in the seals down to the bottom — that there was no fire anywhere around bottom.

Meanwhile the chief engineer located a spot directly over Third West South, where the fire had been hottest. From the charts showing the curves of the floor of the mine it was discovered that there was a natural declivity starting at the foot of the shaft and descending to the point

where the fire had started, and from there the ground rose again to the level of the mine-bottom at the far end of Third West South entry, about three quarters of a mile from the shaft. The total drop at the air-split, where the fire had started, was only about fifteen feet, but as the height of the entry was ten feet, it was evident that if this basin could be filled with water, any fire that existed in that entry could be effectively extinguished without flooding the rest of the mine; a feat that would be impossible on account of the vast area of the workings. Meanwhile, the pipes for compressed air which threaded every tunnel throughout the mine had been filled with water, and as these pipes would naturally be red-hot wherever fire existed, they would burst and discharge the water where it was most needed.

At the spot located by the head engin-

eer, a drill-hole was sunk and at four hundred and twelve feet the drill went through, proving that the surveyors' calculations had been correct. The pipe-line was immediately connected, and for two weeks a steady stream of water poured into the burned section of the mine. In the meantime, almost hourly observations were taken with the thermometers at the shafts, and record was made of the barometric conditions within the mine. A mine that is sealed breathes at regular intervals, like a human being, through the natural crevices in the rock; and even through the seals at the shaft-mouth the vacuum created by the burning out of the oxygen in the mine would draw in the air, and for several hours a handkerchief laid over one of the small openings in the seal would show a steady suction. Then, following, an expansion would be noticeable, and for

an equal period the strong, heavy smells of "black-damp" and smoke would exhale from the mine.

So great was the interest taken by the men in this work of examination that there was little complaining. One morning, however, as I walked back from the powerhouse to the town, I met Luke Davis, an old miner of about sixty, who came limping down the street toward the mine, and from him I heard the first complaint of the kind (and many like it followed) that I had yet encountered.

"The air on top ain't fit to live in," he said. "One day it's cold; next day it's hot. I've had rheumatism ever since the mine shut down. The only place a man keeps his health is underground." And there were many others who shared his views.

Four weeks after the shafts were sealed,

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it was determined that some sort of personal investigation should be made of the conditions in the mine. The thermometers showed that the atmosphere at bottom was reasonably cool, and the amount of water that had been pumped into Third West South was calculated to have filled that entry completely. In addition to this, the steam generated by this water must have reached out and extinguished any fire that might have existed beyond the reach of the water itself. The temperature readings taken at the bottom of the man-hoist were a few degrees higher than those at the bottom of the air-shaft, and as the direction of the fire followed the course of the air, which led to the foot of the man-hoist, it was believed that the safest entrance into the mine could be made by means of the air-shaft, which was located on the main or B entry, about three hun-

dred feet from the man-hoist and coal-hoisting shaft.

The second reason for the choice lay in the fact that in opening this shaft for the descent it would not be necessary to allow any air to enter the mine, as the top of the shaft was completely inclosed by a part of the fan-house—a massive dome of brick and concrete. If the main hoisting-shaft were opened, it would be necessary to construct some sort of an air-lock above it, and this would be rendered still more difficult from the fact that this shaft comprised not only the man-hoist, but two hoisting-shafts, and was, accordingly, three times larger than the air-shaft. The principal objection to the plan lay in the fact that the facilities for reaching bottom by means of the air-shaft were very inadequate, whereas, by the other entrance, use could be made of the hoisting-cage.

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One thing was apparent; and that was, that under no consideration should any air be allowed to enter the mine, as the entrance of air would not only fan up any latent fire which might exist, but the mixture of air with the almost pure gas, or "after-damp," which existed throughout the entire workings, would cause a most violent explosion, and the death of any who were within its reach. Tests of the mine-atmosphere which had been made by chemists showed less than one per cent of oxygen and the presence of enormous quantities of the various gases generated by the burning coal. So poisonous was the atmosphere—for under no consideration could it be called "air"—which filled the shafts and every foot of the tunneling below the seals, that life would be extinguished in approximately ninety seconds, should any man be compelled to breathe it.

The gases which filled the mine consisted principally of carbon monoxide, or white-damp, and carbon dioxide, or black-damp, with a small additional percentage of other gases. White-damp is the gas most feared by the miners, for its properties render it difficult to detect, inasmuch as it is tasteless, odorless, and colorless, and when mixed in the proportion of about one part gas to nine parts air is called "fire-damp," and becomes explosive to a degree hard to realize unless one has seen its effects. Black-damp, unlike white-damp, is heavier than air: a non-explosive gas which may be detected by its peculiar odor. Again, unlike the other, its effect is to suffocate and extinguish fire. This gas is so heavy and moves with such a sluggish flow that, occasionally, when miners have been trapped in a mine following an explosion and have detected

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the black-damp creeping in upon them by its smell, they have been able to stop its advance by erecting dams or barricades along the floor, building them higher as the volume of gas increased, and keeping the air within their little inclosure comparatively clear by rude, improvised fans. Following an explosion, these two gases become mingled and form a mixed gas possessing all the dreaded qualities of each, which is known as "after-damp," and it is this mixture of gases which destroys any life that may remain following a mine disaster.

To contend with these almost impossible conditions, it was determined to make the descent equipped with air-tight helmets, somewhat resembling in appearance those used by deep-sea divers. This ingenious device, which enables a man to exist under such conditions and to conduct investiga-

tions for a period of two hours, consists of a steel headpiece completely covering the fore part of the head and leaving the ears exposed, made air-tight by means of a pneumatic washer which passes in a circle around the top of the head and down each side of the face in front of the ears, connecting under the chin. This washer is inflated as soon as the helmet is adjusted, and pressing out closely against the steel shell of the helmet on one side, conforms closely to the contours of the head on the other, leaving the ears exposed. In the front of each helmet is a round bull's-eye of heavy mica, protected by steel rods; and below the bull's-eye, an inch below the mouth, is the main valve which is closed immediately before the man enters the poisoned atmosphere.

From the helmet, in front, hangs a pair of false lungs, or large rubber sacks, pro-

tected by a leather apron ; and on the back, held by straps over the shoulders and supported by plates fitting closely to the small of the back, hangs a heavy knapsack weighing about forty pounds. This knapsack consists of two steel cylinders, each one containing pure oxygen compressed to one hundred and thirty atmospheres, sufficient to support life for one hour, the two together being sufficient for two hours. Above the oxygen-cylinders are two cartridges, or cans, containing loose crystals of hydrate of potassium sufficient to absorb two hours' exhalation of carbonic acid gas. With the helmet these cartridges and the oxygen-cylinders are connected in a continuous circuit, and as soon as the oxygen is turned on there is a flow up from the oxygen-cylinders by a tube under the right arm to the helmet, and down under the left arm to the cartridges, and through

them again to the tube at the oxygen valve.

Upon adjusting the helmet, the wearer takes several large breaths of pure air, which he exhales into the false lungs on his chest, and immediately shuts the mouth-valve. At the same instant, with his right hand behind his back, he turns on the oxygen, and this, regulated by valves to an even feed to last for exactly two hours, forces itself up the tube into the helmet, and by its pressure and reverse suction, draws down through the other tube and through the cans of potassium hydrate the exhaled breath. Air being a mixture of pure nitrogen and pure oxygen, the oxygen cylinders furnish one necessary element. The second—the nitrogen—already exists in the several breaths that the man has taken into the false lungs, for the nitrogen atoms are indestructible and,

mixed with oxygen, can be used indefinitely. Passing through the potassium-hydrate cylinders, the carbonic acid gas is entirely absorbed, leaving the free nitrogen atoms to unite with the oxygen below; and so for two hours, a steady stream of air passes up through the right-hand tube, and for two hours the cans of potassium hydrate absorb the impurities exhaled, and pass on the nitrogen atoms to unite with the fresh oxygen ever flowing up from the cylinders.

In order that the helmet-men might keep exact account of the amount of oxygen used, there was a clock fastened to the knapsack. When the helmet was adjusted and the oxygen turned on, the hand of the clock pointed to two hours, and as the pressure in the cylinders was reduced, the hand slid back to one hour, thirty minutes, fifteen, and finally zero, when it would be

necessary to open the valves and breathe the outer air or suffocate. We could not see the clocks on our own knapsacks, as they were behind our backs, and so every fifteen minutes or so we would gather in the gas-filled tunnels, and with our electric torches read the minutes remaining on each other's clocks. Thirty minutes left meant a start for top, even if we were near the hoist. We could take no chances. Unconscious men are hard to move, especially when one's own air has almost gone.

It will be clearly seen that it would have been impossible to lower a man into the mine, connected with the surface by an air-hose, as in submarine diving, for the extent of his investigations would be limited to an area extending not more than a few yards from the mouth of the shaft; and the weight of four hundred feet of such an air-line would be liable to tear the



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hose, in which case death would be instantaneous. Compressed air also was impracticable, for a sufficient supply of compressed air to enable a man to be lowered to bottom and conduct his investigations and return would, at its highest compression, necessitate a cylinder of a size and weight that would make free movement impossible.

VIII

FIGHTING FOR THE MINE

IT was a cold, gray morning when a dozen of the men chosen to effect the first descent into the mine gathered inside the small stockade about the air-shaft. Outside the fence, unmindful of the rain and cold, a hundred silent, unexpressive faces pressed close against the palings and watched for what might come. Everything was in readiness for the descent. Inside the dome above the air-shaft the seal had been removed; and the double doors, forming a sort of vestibule, which connected this room with the outer world, made an effective air-lock through which the men might enter. A large, square box, which in the time of operation had been used to

lower heavy supplies, and occasionally mules, into the mine, hung suspended by a steel cable in the air-shaft, and was lowered or raised by means of an engine in the fan-house, the cable running over a sheave-wheel in the crown of the dome.

The air-shaft consisted of two compartments: the main shaft, which was fourteen by twelve feet — a smooth, board-lined shaft, four hundred feet in depth; and an escapement or stairway-shaft beside it, built, in compliance with the law regulating coal-mines, for use in case of accident to the hoisting apparatus. The stairway-shaft was separated from the air-shaft proper by a partition of matched boards, and connected with it at the mine-bottom by a small door. From the bottom of the air-shaft two ventilating tunnels extended, one east, one west; the east air-course on a level with the mine-bottom; the west, by

means of an "overcast" or bridge across the main entry, a passage at a level of about ten feet from the bottom of the air-shaft. Thus to a man standing at the foot of the air-shaft facing the north, the east air-course, on his right, was on the same level as the floor of the air-shaft, the west air-course, on his left, was a square opening ten feet above the ground. From these conditions it would be necessary, in order to reach B entry, which ran under the west air-course, to pass from the bottom of the air-shaft through the door at the foot of the escapement-shaft, and thence by another small door into B entry.

No one knew what conditions would be met with at bottom, but it was determined to make a trial trip, lowering three men in helmets to the bottom of the air-shaft, and hoisting them again without allowing them to leave the box; and, if their trip were suc-

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cessful, to send a second crew of three helmeted men, who would pass through the doors into the main entry and, returning, report what conditions they had found there. Preparatory to the descent, the box was lowered until the white mark on the cable-drum in the engine-house showed that it had reached bottom, when it was hoisted again. This showed that there was no wreckage of any sort in the shaft, which might have been the case had the fire burned loose the shaft-lining.

At half-past nine, the first crew was ready: volunteers, selected for their ability to cope with emergencies, who received large pay on account of the dangerous nature of their work; and with their helmets in place and the oxygen turned on, the outer door of the fan-house was closed behind them, and the rest of us sat down to wait. It was fully five minutes before

the squeaking of the big drum in the fan-house told us that they had started. Inside, lying on the floor at the edge of the shaft, lay a man in a helmet to receive the signals which might be sent upward by the men in the box. The round blade of a circular saw had been hung by a wire from the bale of the box (the iron beam from which it was suspended like a basket), and signals were given by striking this with a hammer. Upon hearing a signal, the man at the edge of the shaft-mouth would immediately transmit it by pulling a bell-rope which rang a bell in the engine-room. One stroke meant "stop." Two strokes, "haul up." Three, "lower away." Four, "safe arrival." Five strokes on the saw-blade—which rang like a great bell—meant "haul out at top speed; danger has been encountered."

Three minutes after the box had started

its descent came a sudden violent ring on the bell-rope, and the intense agony of uncertainty became almost unbearable. Then came three bells, and we knew that the journey had been resumed. Five minutes—for the box had been lowered very slowly—and then came the four strokes denoting their arrival; and a minute later, the two bells to hoist. Four minutes later there was a noise inside the house and, with a puff of smoke, the door burst open and the four helmeted men, the three who had made the trip and the signalman, stumbled out into the light. The doors were instantly closed, the helmets removed, and the first story of the descent into the mine was told.

So dense was the dead smoke in the shaft, and so feeble the light of the electric torches which they carried, that they had seen nothing. Their descent had been un-

eventful except once, when the box, swinging silently in the shaft, had for a second struck on one of the cross-ribs, and hence their signal to stop. At bottom they had noticed no excessive heat, although the sweat which poured from their bodies showed that the temperature was far from normal. But they had seen no fire—that was the main point.

An hour later the second shift was ready, of which I was a member, my companions being Delmer, the mine-engineer, and Knox, one of the pit-bosses. Before starting, all our plans were carefully arranged: Delmer was to carry the hammer, with which he would signal on the saw-blade; I was to carry his electric torch and my own; and Knox was to pay especial heed to the swinging of the box to prevent it from catching on the side of the shaft. Upon reaching bottom, we were

to leave the box and pass through the door into the bottom of the escapement, and thence out through the second door into B entry. There we were to take the temperature with a self-recording thermometer, and observe whatever we could without going more than a few yards from the door. This over, we were to return.

With a last look at the cold, gray sky, we adjusted our helmets. The clamps were tightened, the washers inflated, and we drew in long breaths of the damp air. Then the mouth-valves were snapped in place, and the hissing in the valves and a sweetish taste in my mouth told me that the oxygen had been turned on. Like children in a darkened room, we followed Delmer through the first door and turned to see it close behind us. There was a sudden blackness, and silence save for the steady hissing of the compressed oxygen

and the even click of the regulating valves. The second door was opened, and without seeing it we passed through and stood, as we knew, on the brink of the open shaft. Here three electric lights gleamed dim and far away through the thick smoke that completely filled the dome above the shaft-mouth.

I had known darkness before — the darkness of the mine, darkness that meant a complete absence of light; but here was an opaque darkness, a darkness that the presence of light failed to affect. At my feet a board stretched out into the smoke and disappeared. Stooping clumsily to my knees under the weight of the helmet, and peering forward through the bull's eye in the dim rays of the electric lights, I saw that the board passed over three feet of blackness into the box which hung in the middle of the shaft. One side of the box,

fastened by heavy hinges, had been lowered down like a drawbridge, and from this open side to my feet extended the frail gang-plank that we must pass over. Out before me, in the smoke and blackness, the box swung dimly, its nearest angle half-lost, like the bow of a ship in a dense fog.

One by one, we crawled on our hands and knees over the swaying board and reached the box; but so dense was the smoke and blackness that, holding my electric torch at arm's length, try as I might, I could distinguish nothing but a faint yellow smudge of light at a distance that I knew to be but the length of my arm. The last man having crossed, the watcher in his helmet on the brink pulled back the board; and groping clumsily, and hampered in the darkness, we pulled up the swinging side of the box and lashed

it into place. Then, clear and vibrant, came the three strokes from Delmer's hammer on the saw-blade. Far away we heard the bell transmitting our signal in the engine-house; and then, imperceptibly, without jolt or sound, the faint smudge of tawny yellow of the three electric lights on the edge of the shaft seemed to rise above us, and — standing silent in the box — we sank into blackness unutterable. Instantly, sense of direction was gone. We could see nothing. We could not even see through the bull's eyes of our helmets the walls of the shaft — almost within arm's reach. Once, I held my light pointed close against the bull's-eye of my helmet, and found a sudden relief in its yellow glare.

For a time that was eternity we seemed to swing in the blackness of space, but we knew that we were steadily descending.

I was gripping the side of the box, which came about to my waist-line, with one hand, and trying with my torch in the other to peer through the smoke at the side of the shaft, when there was a sudden jolt and an abrupt stop. The box, swinging in its descent, had caught by one corner on a cross-rib of the shaft. The sudden stroke from Delmer's hammer on the gong vibrated in my ears, and I felt the floor of the box tipping under me like the deck of a sinking ship. With one arm hooked over the side, and the other clutching at the bale, I clung frantically, I could not even see to what, in the darkness. Far above us, the signal had been heard and transmitted, and with the box at an angle of almost forty-five degrees, it stopped in its descent. There was a moment of waiting and then a lurch as Knox pushed us free from the side of

the shaft, and at the same instant a sudden slap as the heavy box fell and brought up on about three feet of slack steel cable. We learned afterward that we were at a level of about two hundred feet. Then three strokes, and we knew that we were again descending; but now, with hands outstretched, we pushed ourselves away from the walls as we swung from side to side in our descent. Two minutes more and our heavy car landed lightly as a thistle at the bottom of the air-shaft.

We had expected that we should feel the slight shock as we hit bottom, notwithstanding the fact that the engineer on top would calculate our position exactly and would bring us slowly to a rest; but our arrival was puzzling, for there was no jar and, in addition, the box landed on an angle, when it should have rested squarely on the floor of the air-shaft. For

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a few seconds we remained in our places, silent and wondering; then, one by one, we climbed over the side. As I stepped over the edge of the box, taking care that the tubes of my apparatus did not catch on any projections, my feet almost slipped from under me, for it seemed as though I had placed them on a slippery mattress.

One by one we crawled out and over the strange, soft object that lay under the box; and then, peering closely in the faint light of our torches, we saw that we had landed on the bloated bodies of two mules which had evidently fled before the smoke and fire when the mine was abandoned and had died seeking the last breath of air at the foot of the air-shaft.

There was about a foot of water at the bottom of the shaft, for we had pumped water down the sides to prevent the heat from igniting the thin board lining; and

through the water, and over the bodies of the mules, we groped our way to the small door a yard away that led in to the foot of the escapement. One by one we crawled through the door, wriggling to get our shoulders and our knapsacks through its small confines, and yet with constant care that the tubes of the apparatus and the knapsack and helmet did not touch anything; for the words of the chemist, that ninety seconds of the gas would kill, were never for an instant forgotten. The foot of the escapement was a little lower than the bottom of the air-shaft and the water correspondingly deeper. With the clear splashing in contrast to the dullness of the darkness, we groped for the second door and passed through it into B entry. As I lifted up my shoulders on the other side of the doorway, a sudden heat struck me, and I realized that the fire had been

nearer the mine-bottom than we had supposed.

Uncertain as to the perfect efficiency of our apparatus—for we were all new to it—we refrained from venturing far from the little doorway through which we had just passed. With our hands we examined the props on either side of the entry, and from their feeling knew that the fire had not reached them, and that the mine-bottom was unharmed; but the intense heat which brought the sweat suddenly out upon us raised the fear that somewhere,—perhaps only a few yards away,—hidden in the smoke and darkness, lay a dormant fire which the presence of air would fan into active flames. Slowly we withdrew through the doorway, and once more climbed over the mules into the box. The sudden transition from the heat of B entry to the cooler atmosphere

of the air-shaft condensed the sweat inside our helmets and smeared the inside of our bull's-eyes with a thick white mist that cut off even the little that we had previously been able to see.

I have not mentioned the conversation or words that passed between us, but I do not remember that we said much beyond the few words that were necessary. The scant sounds that echoed through the isinglass of the helmets seemed more like the far-off bellow of some animal than the voice of a man.

Once again in the car, we gave our signal, and far off — four hundred feet above us — the expectant ears of the watcher caught the note of our two bells like distant church chimes; softly we felt ourselves lifted, and the ascent was begun. Four minutes later the three electric lights at the shaft-brink glowed — now almost

defiantly — through the smoke, and we lowered the side of our ship and dragged in our gang-plank. Then, one by one, we groped through the first door — all of us — and then through the second. My helmet had leaked and my head reeled in a misty sort of way from the time I left bottom; and as the bright, gray world outside streamed in through the sweat-streaked bull's-eye, it seemed more like a pleasantly swaying picture than a reality. Some one pulled open my air-valve, and in a second my helmet was off and I drew into my lungs air that had seemed never so sweet or fresh.

Already another crew was preparing for a third descent, to carry our investigations still further.

For one long week we continued our work at the air-shaft, and almost every hour a crew of helmeted men was lowered

down in the swinging box to the bottom. Working in the darkness by the feeble light of their torches, knee-deep in water and climbing over the rotting bodies of the mules, they erected stoppings across the openings of the two air-courses which led from the bottom of the air-shaft. The small door connecting the air-shaft with the escapement or stairway was then opened, and a few hours later the big fan at the fan-house began slowly to turn over and force pure air down the air-shaft, which — as our stoppings proved to be tight — found no escape into the mine and returned up the stairway, making a single loop at the bottom. In half an hour both compartments of the shaft were clear, and men, with safety-lamps and helmets ready in case of danger, descended and found the smoke gone and the air clean on the bottom. That night the bodies of


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the nearest mules were hoisted out and everything was put in readiness for a trip on the following morning into the tunnels of the mine nearest the air-shaft. With clean air at bottom, it was now possible to put on our helmets there and go directly into the mine, avoiding the danger and discomfort of the long helmeted trip down the smoke-filled shaft.

It was about nine o'clock in the morning when four of us prepared for this first investigation of conditions existing in the mine surrounding the air-shaft. Our helmets were adjusted on top, leaving the air-valve open, to be closed when we passed through the small door at the foot of the stairway into the mine. Delmer stayed in the box, and the three of us left him and, splashing noisily in the water, crawled through the small door into the door of the escapement, and then suddenly

opening the door into the mine, passed through it as quickly as we were able. We realized that fire might exist beyond, a possibility which made it necessary for us to crawl through as quickly as possible in order that the puff of air which would accompany us might not be of sufficient volume to mix with gas and form an explosive mixture which the fire would ignite. I was the last to go through the door, turning my shoulders sideways in order to pass my knapsack through the narrow aperture.

From the comparative coolness of the shaft we stepped out into B entry, and our first impression was one of heat, for the air was hot beyond our expectation. We had supposed — from the volume of smoke that had been in the air-shaft before it was blown out — that B entry, and probably most of the rest of the mine, would be in



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a like condition, but the conditions were almost worse than they had been in the air-shaft. The smoke was thick as a fog-bank. Groping blindly through the blackness upon which our lights seemed scarcely to make an impression, we reached the other side of the entry, a distance of about twenty feet. Then, through the sweat-streaked glass in my helmet, I saw a dull red glow, first almost imperceptible, and then brighter as we advanced: a tinge of tawny color smeared into the thick black smoke. The entry was still on fire, and a few steps more brought us so close to the flames that the heat on our unprotected hands and necks became almost unbearable. There was nothing now that could be accomplished, and after a few brief words from MacPherson, bellowed through his helmet, we turned and felt our way back to the small doorway.

It was now doubly necessary that our exit should be made as quickly as possible, for we were standing in a gas-filled entry; an open fire, denoting the presence of oxygen, was burning actively behind us, and every second that the door remained open as we passed out would allow the clean air from the air-shaft, carrying more oxygen, to pass into the entry.

Without a word, stumbling awkwardly in our haste, we climbed through the door and fastened it behind us. "The entry is on fire," we shouted to Delmer as we climbed over the edge of the box; and then for three or four long minutes we stood, voiceless, as the box swung upward, each man with the fear in his heart that a sudden explosive blast from the mine below would hurl us to an instant destruction.

IX

EXPLOSIONS

OUR exit was safely accomplished, and after a conference at the fan-house it was realized that through some crevice or opening from the air-shaft to the mine, which had escaped our notice, air had passed into the workings; and while we had labored taking out the bodies of the mules, the latent fire, revived by this new supply of oxygen, had been fanned into active flame and had crawled down the entry to the very bottom of the shaft. Under these conditions all our work had to be abandoned, and reluctantly we replaced the seal over the air-shaft. A few hours more would have been all that was

necessary to bring the fire into the shaft and destroy it.

Again a number of the men who had until now been active in the work lost heart and left town. December had come, and with it, cold, gray days, with occasional flurries of snow, and ice in the early mornings. Disappointed, but not downhearted, and spurred on by the more than double pay they were receiving for their work, the men who remained began to follow out the instructions of those in charge for conquering this unexpected development. At the mouth of the air-shaft a great furnace was constructed, and for four days and nights the fumes of sulphur were pumped slowly down the air-shaft: a vapor which sank of its own accord into the mine and, it was believed, would smother out the flames at the foot of the shaft. In addition, the pipes, which

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had been connected with the two drill-holes that we had bored down from the surface into the mine, were connected with the boilers in the power-house, and for a week steam was sent down the pipes to condense in the mine below, and assist the sulphur fumes in extinguishing the fire.

By the middle of the month, it was determined to make another attempt to descend into the mine. It was no longer advisable to use the air-shaft as an entrance, for our previous experience had told us that the fire, if it still existed, would be at the foot of that shaft; accordingly an air-tight house with double doors and a vestibule was built over the hoisting-shaft, and preparations were made to descend in the regular hoisting-cage. This was much easier, for here there was no danger of mishap, as there had been in the swinging box in the air-shaft. The steel elevator

would carry us to the bottom in less than a minute, and the regular mine-signals would give us easy communication, when on bottom, with the men above.

The first trip down proved highly encouraging. There was no fire or trace of fire anywhere around the foot of the hoisting-shaft. The entry was filled with smoke, but it was not as dense as it had been in the other shaft, and with new and more brilliant portable electric lights which we had secured, we were able to work under far more favorable conditions. The first crew that descended went only to the bottom and was immediately hoisted out again; the second crew continued the exploration from the bottom of the shaft; and the third crew, of which I was a member, explored B entry toward the foot of the air-shaft as far as we were able to penetrate.

At about two thirds of the distance between the hoisting-shaft and the air-shaft, the steam which had been pumped into the mine had loosened the roof, and a great "fall" of white stone seemed effectively to block the tunnel. On our next trip, however, we discovered that high up on the right side was a small opening through which we could crawl; and, hampered by our helmets, and fearing to press even lightly against the great blocks of stone which arched above us, lest a touch should bring down tons of rock from the loose roof, we crawled over the "fall" and down into the entry on the other side.

Here the smoke was as thick as it had been when we first penetrated into that portion of the entry from the air-shaft, but the heat was gone, which seemed to indicate that the sulphur and steam had done their work. Tramping through the

water which flooded the floor of the entry, and which was now coated, like boiled milk, with a white skin of sulphur, we reached the bottom of the air-shaft. A few feet beyond the small door, the fire which we had seen that other morning had burned through the props and, the support gone, the roof had fallen; to what extent we were unable to determine. The work before us now consisted in shutting off the various entrances into the rest of the mine which led from that part of the entry lying between the two shafts, in order that we might remove the seals from the air-shaft and draw the air slowly down the hoisting-shaft, through B entry and the small door at the bottom of the escapement in the air-shaft, and up to the top again through the air-shaft; thus creating an actual air-zone in the mine reclaimed from the gas and smoke.

For ten long days the work continued, so slowly and so laboriously that it was sometimes hard to see the end of our labors. Hampered by the weight and bulk of the helmets, and panting when our exertions caused our lungs to demand more air than the regulating valves could supply, we erected six stoppings, of matched boards and canvas, over the mouths of the various tunnels which led off from B entry; and with our bare hands mixed plaster and smeared the cracks and edges until the stoppings were tight. Then came the last and hardest stopping of all, for one had to be built across the entry just beyond the air-shaft, for which it was necessary to carry all the material—lumber, saws, hammers, metal lath, and sacks of plaster—up the entry to the fall, and then over the hazardous pass and down into the smoke and water on the other side.

Day and night the work continued, and after a week of terrible labor the stopping was completed. I remember one of the last trips we made, when nerves and muscles, worn and exhausted, almost refused to continue their work. We had crawled through the pass down into the smoke and water on the other side. The day before, two coils of hose had been dragged over the fall and, with the greatest difficulty, connected with the water-main in the air-shaft, and the streams directed against the fall beyond the air-shaft, where fire might still exist beneath the tons of fallen rock. The muffled roar of the water filled the black smoke-packed tunnel with sound, and every few minutes the tall, four-hundred-foot column in the pipe would break, and there would be a roar and crash as though the whole roof were giving way above us.

We had left a little opening in the stopping, that we might go through and plaster the opposite side, and as I crawled back from doing this work, my helmet struck sharply and twisted sideways on my head for a second, allowing a little gas to leak in between the washers. A minute later, as I rose to my feet, a dizziness seized me, and calling to my two helpers, we started for the hoisting-shaft. We all realized that should a man become unconscious through a leak in his helmet, it would be impossible to get the dead weight of his body up and over the fall. With that one thought in each mind, we slowly crawled up and over the masses of rock, through which many journeys had worn a hazardous path, and down on the other side. And now flashes of light, like electric sparks, seemed to play before my eyes, sliding down across the front of my hel-

met. My knees began to sway, and it suddenly occurred to me that they must be bending in both directions as I walked. It was a hard trip to the shaft, and I realized how bright was the cold sunshine on top, and how clean and crisp was the open air, when they helped me off with my helmet.

On Christmas Eve we lost a man under very similar circumstances. Either by striking his head or in some other way, he had loosened his hemlet and been overcome by the gas which had leaked in. His body lay on the far side of a brattice, and his weight and the helmets which his companions wore so hampered them that death came before he was finally brought to the surface.

With the completion of this last stopping, the end of our terrible work seemed near, and it was with the spirit of a holiday that the men tore off the seal from the

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air-shaft and opened the doors of the house at the top of the man-hoist. Slowly the great fan once more turned, and after two hours, when the safety-lamps no longer detected the presence of gas in the air which came out of the air-shaft, we cautiously descended. With our helmets laid aside and with the comparatively bright light of our safety-lamps, the mine took on a more familiar and homelike aspect. In a few hours, no longer hampered by hemlets or conditions of smoke and gas, we tore down a wide passage through the fall, an operation that would have taken days to accomplish under the former conditions, with the helmets. That evening in the Superintendent's room in the office-building, those who were in charge, with the maps of the mine spread before them, planned the next move in the fight and determined which entries should next be

opened and how the air-currents should be led into them in order that the mine, tunnel by tunnel and section by section, might be cleared of the smoke and gas.

Meanwhile, a dozen men, under the leadership of Boar, had remained in the mine and were tightening the stoppings and preparing for the work of the coming day. It was about eleven o'clock that night when Boar heard a slight explosion beyond the stopping by the air-shaft. Without alarming his men, he began an investigation, when two more violent explosions threatened to blow down the stopping. The unexpected had again happened. Stoppings once more had leaked, air had passed into the gas-filled tunnels, and fire still existed.

Without a second's delay the men were hoisted from the mine, and fifteen minutes after the last man stepped from the cage

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there came a sudden explosion in the mine. From the hoisting-shafts a huge white cloud of vapor shot up into the night; but at the air-shaft the force of the explosion was more violent, and the great dome of reinforced concrete above it fell in a mass of crumbled wreckage, swept back clean from the edge of the shaft.

It was one o'clock when I reached the fan-house, and a great full moon was standing high in the cold winter sky. Up from the square, black mouth of the air-shaft, a tall white column of vapor rose into the night, and then, when the mine began to breathe, disappeared; and with our hands held above the black hole, we could feel the rush of air sucked back into the abyss.

At an interval of about an hour following the first explosion there had come a second but less violent one; and again two

hours later, when the mine had sucked back sufficient air to form another explosive mixture, a sudden hissing puff again shot out from the shaft, breaking into three pieces two twelve by fourteen green oak beams that we had laid across its mouth as the foundation for a seal. So sudden was the explosion that Peter Dawson, a powerful Negro who was crawling out over one of the beams when it occurred, was blown a distance of over fifty feet. We found him lying beside the track beyond a string of box-cars, with the blood running from a bad scalp-wound. His first words were that he had been tossed completely over the cars. "I seen the roofs all white with frost an' moonlight," he muttered; and the doctor later affirmed that Pete would have been killed when he landed on the rail if he had not hit on his head. A hundred men were now working

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in the moonlight, and in half an hour two more of the great beams were placed across the shaft-mouth, and planks and canvas, packed down with clay, above them.

The damage at the top of the man-hoist had been slight, and only the doors on the house above it had been blown from their fastenings. For the third time the shafts were sealed.

X

ROB CARR

IN the days that followed the explosion there came to all the men the unconscious realization that the next attempt to open the mine would in all probability be the last. If the attempt should prove successful, a few months' time might see the mine again in working order; but should another disaster occur, the mine—now partially ruined — would probably be wrecked beyond any immediate recovery.

As there had been no trace of smoke following the explosion, and as the mine had been so promptly sealed, it was reasonable to suppose that little, if any, fire existed in the workings; and the only question was, how much of the work of restoration

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that had been effected was destroyed by the explosion of the gas?

Ten days later, the helmet-men again were lowered into the mine, and, after remaining underground for an hour and a half, came out and reported that the force of the explosion had expended itself principally up the air-shaft, and that although the numerous stoppings that we had erected had been for the most part destroyed there were no serious "falls" that they could discover, or any special damage to the entries which they had explored. Immediately the work of restoration began afresh, and all day and night the helmet-men in regular shifts entered the gas-filled mine, and put back in place the stoppings around the mine-bottom, in order to create once more an air-zone for the workers. The work was dangerous. Again we lost a man, an enormous Negro, who had in some way

loosened his helmet and fallen unconscious, too far from the foot of the hoisting-shaft for his comrades to drag him to the hoist; before the rescue party, consisting of three more helmet-men, had reached him, he was dead. And during these more recent days, another miner had met his death in the blackness of the entry. The pressure of the pneumatic washer beneath the helmet had stopped the circulation around the top of his head, and in endeavoring to loosen his helmet and relieve the pain, he had let in a breath of the gas. We got him to the surface with his heart still faintly beating, but death soon followed.

The men used to get into their helmets in a little room that we had fitted up for the purpose in the warehouse, one hundred feet from the top of the hoisting-shaft; and as we saw the doors close behind the men as they entered the hoist, every man

of us would instinctively look at his watch and mark the time of the entrance of the shift. An hour later, some one was sure to remark, "They've been gone an hour—just"; and then, a little later, "They're down an hour and ten minutes." It was then reasonable to expect their signal to the hoisting engineer at any minute. An hour and twenty minutes, or often thirty, would sometimes pass before the little bell in the engine-house rang its "hoist away." If it were an hour and a half, some one would say, "They ought to be out by now"; and Billy Tilden, who had charge of the helmets, would silently begin getting ready a second set. It was a terrible feeling that would come over us as we watched the minutes slip past the time when the men should appear; and it was a thought that had come to us all, that Charley one day voiced: "Times like this, I'd rather be

down with 'em than safe on top and all scareful."

"They are coming out!" some one would yell from the door of the hoisting engineer's house; and then the strain would become intense. An hour and a half or an hour and three quarters down was a long trip, and if it were the latter, the question would arise silently in every one's thoughts, "How many will appear?"

Four always went down on a shift, and twice I remember when the door of the gas-lock above the hoisting-shaft burst open, and but three helmeted men staggered out into the sunlight. As the first man's helmet was loosened, a dozen questions were fired at him. Whom had they left? Where was he? And while they were talking, the second shift was already on the hoist to the rescue.

After three weeks it seemed that suc

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cess would reward us. An air-zone was created between the two shafts, and helmets were practically discarded except for exploration into the more distant workings of the mine. From the north end of B entry the air-current had been directed into the West North portion of the mine, and that entire section had been cleared of the gas. There had been no fire here, nor had the effects of the explosion been felt, and it was like walking the streets of a silent and long-deserted city to explore these entries so hastily abandoned on the night of the fire four months before. Day and night, like the skirmish line of an army, the men in charge moved slowly from place to place at the edge of the air-zone, each day penetrating farther and farther from the foot of the man-hoist as the air-currents drove back the gas, and forced it up and out through the shaft;

and with these men ever on ceaseless guard, gangs of miners attacked the great falls in B entry, and carried on the slow work of removing the piles of fallen stone, and retimbering and strengthening the weakened roof.

I went on at three o'clock, on a shift that lasted until eleven in the evening, and for those eight hours my chief work consisted in testing and marking the line where the life-supporting air ceased, and the invisible, tasteless, odorless gas began. Holding our safety-lamps in the right hand, level with the eyes when we suspected the presence of gas, we would watch the flame. The safety-lamp—a heavy, metal, lantern-shaped object, with a circular globe of heavy plate glass—is the only light other than electricity that can be safely carried into a gaseous mine. The lamps were lit before they were brought into



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the mine, and in addition were securely locked, that no accident or ignorant intention might expose the open flame to the gases of the mine. Over the small, sooty, yellow flame which gives a light less bright than that of an ordinary candle, are two wire-gauze cones fitting snugly inside the heavy globe; and it is through these cones that the flame draws the air which supports it. The presence of black-damp, or carbon dioxide, can easily be detected, if not by its odor, by the action of the flame, which grows dim, and, if the black-damp exists in any quantity, is finally extinguished.

White-damp, the highly explosive gas which is most feared, has, on the other hand, a totally different effect. In the presence of this gas the flame of the safety-lamp becomes pointed, and as the gas grows stronger, the flame seems to sepa-

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rate from the wick, and an almost invisible blue cone forms beneath it. If the miner continues to advance into the white-damp, he will pass through a line where there are nine parts of air to one part gas (the explosive mixture), and the lamp will instantly register this explosive condition by a sudden crackling inside of the gauze and the extinguishing of the flame. Were it an open lamp, the explosion ignited by the flame would sweep throughout the entire workings, carrying death and destruction before it; but by the construction of the safety-lamp, the explosion confines itself to the limited area within the gauze cones, and unless the lamp is moved suddenly and the flame is dragged through the gauze at the instant that the explosion occurs within the globe, it will not extend beyond the gauze. So dim was the light given from these lamps that we usually

carried a portable electric lamp for light, using our safety-lamps principally for detecting the presence of gas.

As the days went by, the men became more hopeful, and it seemed that we were winning in our fight against the invisible. Already an entire quarter of the mine had been recovered from the gas,— a section where men might work without the use of helmets, restoring the burned and blown-down timbering, doors, and brattices.

Rob Carr, assistant mine-manager, was a tall young Scotsman who had been but a year or two in America. He had been brought up from early boyhood in the coal-mines, and had won the confidence of all who knew him, on account of his knowledge of the difficulties which beset the miner, and his ability in overcoming them. He was a tall man,— about six feet two in height,— with slightly stooping

shoulders, caused perhaps by the attitude which days and nights of work under the low roofs of the mine-tunnels made necessary. I never heard him swear, and the men who knew him maintained that he never drank or smoked; and yet, in that rude community, where virtues were often more criticised than faults, there was no man more respected — and, perhaps, loved — than he.

He joined me every afternoon in the scale-house at about five, and for four hours we followed the long west entries out to their headings, testing for gas, and confirming the safety of the men who worked at bottom and trusted their lives in our hands. Each day he joined me, and for the last hours of my shift we remained together, examining and marking everywhere the progress of the air, and the ever-widening boundaries of the air-zone.

At eleven our shift left the mine, and the night shift, under Carr, went down; and it was in order that he might be fully informed as to the conditions underground before he entered the mine with his men that he spent these additional hours in the evening with the men of the shift which preceded him.

One day we had walked from the scale-house down Second West North to the brattice-door which separates that entry from two other entries which cross it at right angles a half-mile from the mine-bottom. It was our purpose to open this door slightly and start the clean air-current behind us, moving through it into the crossing entries, which were filled with gas. A temporary brattice had to be erected in the nearer of the cross-entries, and for an hour we sat on the track while the air hummed through the half-open door, until

the gas had been sufficiently blown back to permit us to pass through and put up the stopping.

As we sat on the track, talking in the low voice that men always use in dark and quiet places, we remarked how like the sound of surf on a hard beach and a wind from the sea was the sound of the air-current as it murmured through the cracks in the brattice-door. For the first time, Carr told me of his wife and the two small children whom he had left in Scotland, to whom he would some day return. "And I'm going to quit mining then," he told me. "I'm going to build a cottage down somewhere along a cove that I know of; where you can hear the surf on the beach, and where you can keep a sail-boat." He had made good, he felt. There was money in the bank that, with the additions of a year or two more, would give him all that

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he desired, and then he was going home. And so we talked and, later, tested and found that the air was clear at last in a little area beyond the door. We erected the stopping, and, waiting a few minutes more to measure with our lamps the speed of the retreating gas, we turned and walked down the track. It was about ten o'clock. In an hour more I would be out, the long, hard day would be over; and then Carr with his night shift would return into the mine, and take up the work where we had left it.

There were lights and voices in B entry at the mine-bottom, and now and then a bit of laughter; and there was a cheerful noise of sledges and the rumble of the wheels of the flat cars as the men pushed them, laden with the broken stone from the falls, down the track to the hoisting shaft. A little before eleven, the orders

were given and the men laid down their tools, and picked up their safety-lamps, to leave. Two decks on the great hoisting-cage carried us all, and a minute later we stepped out into the fresh, cold air of the winter night.

From the yellow windows and open door of the warehouse came the sounds of voices and the laughter of the night shift who were getting ready to go down. We tramped in through the open door, blackened and wet, and for a few minutes rested our tired bodies, and warmed ourselves in the pungent heat of the little room, telling the others what we had accomplished. As I left the warehouse, I stopped for a minute on the doorstep and took a match from Johnny Ferguson, another Scotsman, a strong, silent man, with friendly eyes; then turned and walked home in the darkness of the cloudy night.

XI

THE TRAGEDY OF THE MINE

IT was about half an hour later when I reached my room, for I had stopped on the way to chat with the gate-man. I was sitting on the edge of the bed, loosening the heel of one of my rubber boots with the toe of the other, when suddenly, through the stillness of the sleeping town, from the power-house half a mile away came a low and rising note, the great siren whistle in the power-house. Almost fascinated, I listened as the great note rose higher and more shrill and died away again. One blast meant a fire in the town; two blasts, fire in the buildings at the mine; and three blasts, the most terrible of all, a disaster or trouble in the mine. Once

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more, after an interminable pause, the sound came again; and once more rose and died away. I did not move, but there was a sudden coldness that came over me as once more, for the third time, the deep note broke out on the quiet air. Almost instantaneously the loud jingle of my telephone brought me to my feet. I took down the receiver: "The mine's blown up," said a woman's voice.

It was half a mile between my room and the gate to the mine-yards, and as my feet beat noisily on the long, straight road, doors opened, yellow against the blackness of the night, and voices called out—women's voices mostly.

The gate-man knew little. "She's let go," was all that he could say.

There were two men at the fan-house, the fan-engineer and his assistant, and in a second I learned from them that there

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had come a sudden puff up the air-shaft that had spun the fan backward a dozen revolutions on the belt before it picked up again. The explosion doors, built for such an emergency on the new dome above the air-shaft, had banged open noisily and shut again of their own weight. That was all.

There were half a dozen men at the top of the hoisting-shaft. The hoisting engineer sat, white-faced, on his seat by the shaft-mouth, one arm laid limply on the window-sill, his hand clenched on the lever. "I tried to telephone 'em," he said, "but they didn't answer. The cage was down. She came out with a puff like you blow out of your pipe; that's all." He stopped and awkwardly wiped his face. "Then I left the hoist down five minutes and brought her up," he continued, "but there was no one in it. Then I sent it down again. It's down there now."

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"How long has it been down?" I asked.

"Ten minutes," he hazarded.

I gave him the order to hoist; and the silence was suddenly broken by the grind of the drums as he pulled the lever back, and the cable began to wind slowly upward. A minute later the black top of the hoist pushed up from the hole, and the decks, one by one, appeared—all empty.

There was no one at the mine except the hoisting engineer and some of the night force who were on duty at the power-house and in the engine-room. In the long months of trouble our force had gradually diminished, and of those who had remained and who were equal to such an emergency, part were now in the mine, and the rest, worn out and exhausted by the long day's work, were far away in the town, asleep; or perhaps, if the whistle had aroused them, on their way to the

mine. Instant action was necessary, for following an explosion comes the after-damp, and if any were living this poisonous gas would destroy them.

As I turned from the shaft-mouth, McPherson, the superintendent, a square-built, freckled Scotsman about fifty years of age, came running toward the warehouse. There were but two helmets ready, for so favorably had our work progressed that we had neglected to keep more than two charged with oxygen, and had allowed the rest to be taken apart for repairs. Familiar with the conditions existing in the mine, we realized that the explosion, however slight, must have blown down many of the stoppings which we had erected, and allowed the pent-up gas to rush back into the portion of the mine which we had recovered, and in which the night shift was now imprisoned. If

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the gas had been ignited by open fire, immediate action was necessary, for our own safety as well as for the chance of rescuing the men in the mine; for in the month preceding we had seen the mine "repeat" at regular intervals with two explosions, and if the fire had been ignited from open flame we must enter it, effect the rescue of our comrades, and escape before we could be caught by a second explosion. On the other hand, the chances were equal that the explosion might have been set off by a defective gauze in a safety-lamp or some other cause, and that there would be no immediate explosion following the first one.

In the hurry of adjusting our helmets, no one noticed that the charge of oxygen in mine was short, and that an hour and forty minutes was my working limit; and all unconscious of this, I tightened the

valve, and with the oxygen hissing in the check-valves, we left the bright light of the room, and felt our way down the steps into the darkness of the yard, where a great arc-light above the hoisting-shaft made objects visible in its lavender light. A crowd had already gathered; a dark, silent crowd that stood like a flock of frightened sheep around the mouth of the man-hoist. With a man on either side of us to direct us, we walked to the hoist, our electric hand-lanterns throwing long white beams of light before us. There was no sound; no shrieking of women, no struggling of frenzied mothers or sisters to fight their way into the mine; but there was a more awful silence, and as we passed a pile of ties, I heard a whimpering noise, like a puppy, and in the light of my lamp saw the doubled form of a woman who crouched alone on the ground, a shawl drawn over her head, sobbing.

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We stepped on the hoist, and for an instant there came the picture of a solid line of people who hung on the edge of the light; of white faces; of the lavender glare of the arc-lamp, contrasting with the orange light from the little square window in the house of the hoisting engineer. "Are you ready?" he called to us. "Let her go," we said; and the picture was gone as the hoist sank into the blackness of the shaft. We said nothing as we were lowered, for we knew where the men would be if we could reach them, and there was nothing else to talk about. The grind of the shoes of the hoist as they scraped the rails made a sound that drowned out my feeble whistling of the "Merry Widow" waltz inside of my helmet.

We felt the motion of our descent slacken, and then came a sudden roaring splash as the lower deck of the hoist hit

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the water which filled the sump. Slowly we sank down until the water which flooded that part of the mine rose, cold and dead, to our knees, and the hoist came to a stop. Splashing clumsily over the uneven floor, we climbed the two steps which led to the higher level of B entry, and for a minute turned the white beams of our lights in every direction. There was nothing to be seen, and no trace of any explosion except a thin, white layer of dead mist or smoke which hung lifeless, like cigar-smoke in a quiet room, about four feet from the ground; but there was a silence that was terrible, for in it we listened in vain for the voices of men. At first we assured ourselves that there was no one around the bottom of the shaft, for we had expected that some one, injured by the explosion, might have been able to crawl toward the man-hoist;

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but there was no trace of any human being.

Walking slowly and peering before us through the bull's-eyes of our helmets, to right and left, we advanced down the entry, our lights cutting the blackness like the white fingers of twin searchlights. Suddenly, far off in the darkness, there came a sound. It was laughter. We stopped and listened. High, shrill, and mad the notes caught our ears. Again we advanced, and the laughter broke into a high, shrill song. To right and left we swung the bars of our searchlights, feeling for the voice. Suddenly the white light brought out of the darkness a tangled mass of blackened timbers which seemed to fill the entry, and into the light from the pile of wreckage staggered the figure of a man, his clothes hanging in sooty ribbons, and his face and body

blackened beyond recognition. Only the whites of his eyes seemed to mark him from the wreckage which surrounded him. In a high-pitched voice he called to us, and we knew that he was mad. "Come! Come!" he cried. "Let's get out of here. Come on, boys! Let's go somewhere"; and then, as his arms instinctively caught our necks, and we felt for his waist, he began talking to Jesus. With our swaying burden, we turned and retraced our steps down the entry, and fifteen minutes after our descent into the mine, we handed out of the hoist the first man rescued, to his friends.

Once more came the vision of the great black wall of people in the lights at the mine-mouth, and again we plunged down into the blackness and silence of the mine. Reaching bottom, we walked as rapidly as we were able beyond the point where

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we had found the madman, to where the great structure of the scale-house had once filled a cross-cut between B entry and the air-course behind it. Where once had been solid timbers and the steel structure of the scales, now remained nothing but the bare walls of the cross-cut, swept clean by a giant force, and in the entry the crumbled and twisted wreckage marked where the force of the explosion had dropped it in its course. With a swing of my light I swept the floor of the cross-cut. Half-way down it, on the floor, lay what seemed to be a long bundle of rags. I knew it was a man. There was no movement as I walked toward it, and as I knelt over it a sudden impulse came to me to disbelieve my first thought that this could be a man. Prevented from seeing clearly by the bull's-eye of my helmet, and the poor light of my electric lamp, I felt for

his chest, and as my hand touched his breast, I felt that it was warm and wet. Perhaps he was alive. I ran my light along the bundle. Those were his feet. I turned it the other way. The man was headless. Instantly I got to my feet, and in the faint glimmer of McPherson's light I saw that he had found something in the wreckage. "What is it?" I bellowed to him through my helmet. He pointed with his ray of light. A body hung in the mass of wreckage, thrown into it like putty against a screen. We turned and continued our way up the entry.

Halfway between the shafts there was a temporary canvas stopping, and we knew that if we could tear this down, the air from the fan which had been speeded up must short-circuit, and pass through B entry, clearing out the after-damp before it. Most of the men, if not all, would

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be in this entry; of that we were confident. By tearing down the brattice and thus changing the direction of the ventilation, life might be saved.

As I have said, I had entered the mine on my first trip with a short charge of oxygen, and in the urgency had failed to replenish it before going down the second time. As I turned from the cross-cut a sudden tugging at my lungs told me that my air was running low. Beside the track, in a pool of water, lay a blackened object that I knew to be a man. He was the only one I recognized, and I knew that it must be Daman, one of the gas-inspectors,—the body was so small. A few feet beyond him lay another, and another, all blackened and unrecognizable. The white wall of the brattice gleamed suddenly before us, and in a second we had torn it from its fastenings. One side had already disap-

peared from the force of the explosion. Why it was not all torn to ribbons, I do not know.

As I turned, I called to McPherson that I was in, and as I spoke a sudden blackness engulfed me. My air was gone. The sights of that awful night and the long strain of the months of dangerous work on high-strung nerves had caught me. I came to with my eyes closed, and a clean, sweet taste of fresh air in my mouth. I thought I was above ground, but opening my eyes I saw that I was looking through the bull's-eye of my helmet at a blackened roof, dim in the single shaft of a lamp. McPherson was talking to me. He had dragged me from where I lay to where he had felt the air blow strongest. My weight, increased by the forty-five pounds of the helmet, made it impossible for him to think of moving me unaided. There

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was no time to summon assistance. In the strong current of air, he had opened my valves and trusted that, revived by the fresh air, I could reach the hoisting-shaft under my own locomotion before the after-damp could overcome me. Faint and reeling, I got to my feet; we started down the entry, our arms about each other's necks. We were both staggering, and halfway to the sump I fell. Then we crawled and rested and crawled again. I think I remember splashing in the water at the foot of the hoisting-shaft, but nothing more. Out of the twenty-seven men who had entered the mine we had found but one alive.

In the long night that followed about twenty of the bodies were removed from the mine, for the fan soon cleared the gas from the main entry, where most of the men had been when the explosion occurred.